

# THE IRON AGE

New York, February 2, 1922

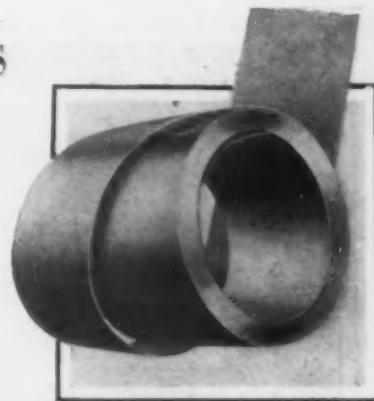
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## Swedish Steel Belt Conveyors

Especially Adapted to Hot and Sticky Materials,  
Which Cannot Be Carried on Rubber or  
Fabric Belts—Lower Power Cost

BY HARRY CARLSON



IN a recent engineering publication the following statement was made: "By means of belt conveyors large carrying capacity is combined with low power consumption. Belts usually take 50 per cent of the power used by other conveyors, so the problem of the engineer is really to see whether or not belt conveyors can be employed, as all things are in their favor." It is evident from this that belt conveyors are recognized for their efficiency, and a careful study of industrial conditions reveals the fact that they have been extensively used.

When a belt conveyor is mentioned, it is natural for the engineer to picture in his mind a canvas, balata, or rubber belt, because of their universal adoption. To speak of a steel belt conveyor immediately brings one into a foreign field, and questions arise, because of the fact that they have not been used in this country. But the Sandvik Steel Works, Sandviken, Sweden, with a wide experience covering about 50 years in the cold rolling of steel, have for 12 years been making steel belts to be used for conveying purposes.

The flexible steel belt, known as the "Sandvik" belt, is made from Swedish charcoal steel with about 0.65 per cent carbon, cold rolled, hardened and tempered by a special process, which was originated by the company and perfected after years of conscientious application and experiment. The Sandvik works have always made

a specialty of cold rolled material, and for this purpose have acquired controlling interest in a number of the famous Swedish mines producing iron ores low in sulphur and phosphorus. It may be interesting to note that the expression "Swedish Steel" was originally applied to steel made from these ores.

To date, about 1300 steel belt installations have been made, for handling coal, coke, charcoal, iron ore, concentrated iron ore, copper ore, phosphate ore, sulphur ore, rock, warm calcium carbide, silica, warm dry clinker, ammonia, soda, etc., deals, battens, slabs, laths, chips and saw dust, brown sugar, sugar beet pulp, dried milk, yeast, dried vegetables, potatoes, chocolate, sacks of material, boxes, cases, packages, etc., clay, cement, and sands of various kinds.

Steel belt conveyors are especially suitable for conveying warm, sticky, sharp or abrasive material, which rubber and fabric belts cannot handle satisfactorily. The advantages of the steel belts over apron conveyors and wire woven belts are the elimination of heavy maintenance costs, power consumption and the spilling through joints and interstices.

The Sandvik belt has an especially hard, smooth



Installation of Steel Belt Conveyors at a Mine 45 Miles North of the Arctic Circle, Where Two 14-in. Belts Handle Iron Ore in Concentrate Mills



Coal Carried Up an Incline of  $18\frac{1}{2}$  Degrees by a Steel Belt Troughed Conveyor. Leather strips, riveted to the belt, insure against slipping

and dense surface, which accounts for its durability and high wear-resisting qualities. The belt, installed as a conveyor with standard size pulleys, is subjected to a working stress of 28,000 to 30,000 lb. per sq. in. when traveling over the pulleys. The manufacturing process also imparts properties that make it particularly adapted for conveying hot material. By special methods of heat treatment, hardening and tempering, this belt acquires better rust-resisting qualities than common cold rolled steel of similar composition.

The successful application of the steel belt in the fertilizer industry also proves that it resists chemical

with a one-sided load, do not sag. This allows a relatively broader part of the belt to be used for carrying the load. These attributes are due to the fact that the steel belt is less flexible than the textile fabric.

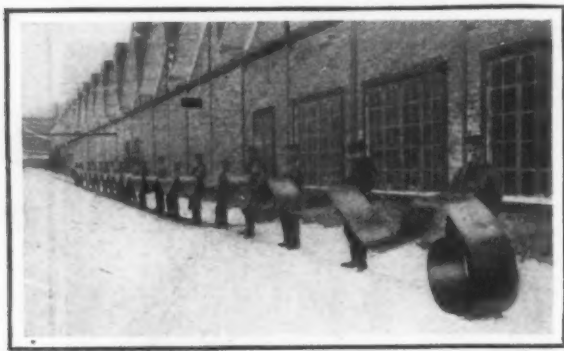
Due to the unavoidable vibration in a textile belt while running, the material conveyed has always a certain tendency to spread, and therefore the width of



Adjustable Scrapers Make It Possible to Discharge Part or All of the Load at One or More Points, as Desired

action remarkably well. However, it is a well known fact that there must not be any free sulphuric acid present, nor any soluble sulphuric salt in connection with moisture, on account of the corrosive action of a weak solution of sulphuric acid on steel, especially when warm.

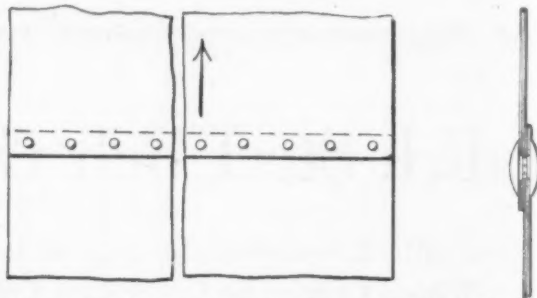
In the sugar, pulp, and lumber industries all over Scandinavia, where Sandvik conveyors are extensively used, the steel belts often run in the open air, subjected to the influence of rain, snow and sunshine, and



Steel Belt 285 Ft. Long, 16 In. Wide and 0.035 In. Thick, Weighing About 550 Lbs. This belt was cold rolled, hardened and tempered

have always been found to work well. The coating of rust that appears when such a belt is idle does not penetrate, but forms a thin film that protects the steel from further injury. When the belt is not in use for a considerable time, as is the case with the beet pulp conveyor, it may be found advisable to have it coated with a rust preventative.

As compared with flat rubber belts of the same width, the steel belt possesses greater transverse rigidity and therefore a higher capacity, as the edges, even

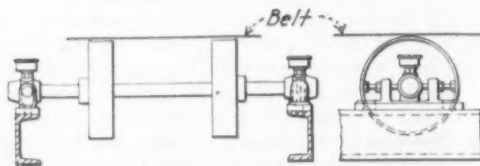


Riveted Joint for Steel Belt. The enlarged section shows form of button-head rivets

the loading area in most cases cannot exceed about one-third of the width of the belt. In the case of a steel belt, however, two-thirds of the width may be used without danger of spillage, because it runs so smoothly. This fact is also partly accounted for by the greater rigidity of the steel belt, which allows greater distances between the supporting rollers, thus less disturbance of the inertia of the material.

A special feature is the ease and simplicity with which material can be discharged at any desired point along the conveyor, without the use of cumbersome and expensive trippers. As the belt does not stretch, the tension devices are very simple, as they have to take up only trifling variations in length, caused by changes of temperature.

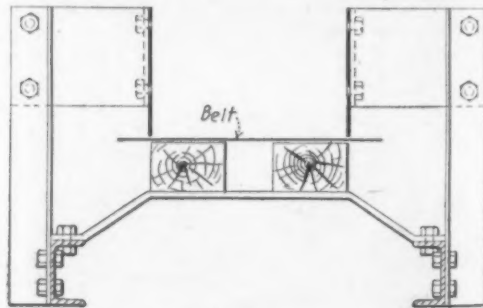
Through intimate co-operation between rolling mill, laboratory and technical men, frequently in touch with



Ordinary Type Idler Set Carrying Steel Belt

customers, manufacturing methods have been steadily improved, and the Sandvik flexible steel belt can now be obtained in one-piece lengths of up to 300 ft., for a width of 16 in. and a thickness of 0.035 in. The lateral deviation does not exceed 0.03 per cent. Before delivery all belts are carefully examined, both as to quality and straightness.

The Sandvik conveyor is designed in two ways,



Section Through Sliding Trough Steel Belt Conveyor

either with the conveying strand sliding on a wooden support, sometimes fitted with skirting boards, trough-like, the return strand being supported on idlers, or else both strands of the band are carried on rollers in the usual fashion. The sliding type, with or without skirting boards, is extensively used in Scandinavian



countries, especially in saw mills and wood-pulp mills, for carrying wood of every description, such as boards, logs, chips and sawdust, also largely for charcoal, etc. Little wear is caused in this type, even for conveyors of considerable length, as the surface of the wooden band soon acquires such a polish that the friction, and consequently the power consumption, are almost negligible.

In connection with heavy, hard and abrasive materials the roller supported type is preferable, the material being placed centrally on the belt and the edges left free, as is the general practice with flat band conveyors. Steel belts cannot be troughed like textile bands, which reduces their capacity for the same width, but this is partly compensated for since, as pre-

viously mentioned, a flat steel belt has a wider loading area.

It is obvious that the introduction of the steel belt has widened the field of application of the belt conveyor, for textile and rubber belts are not suited for conveying hot and sticky materials. Such sticky material as sugar, for instance, can be cleanly and efficiently scraped off. Sharp-edged cutting materials, such as glass, can also be transported on this belt. Finally, material which on account of its high temperature cannot be handled on belts of rubber or balata, can be carried by the steel belt. All these advantages open up a wider field of usefulness for the belt conveyor, and should be welcomed by the engineer interested in the handling of materials.

## Importance of Managerial Understanding of Welding

### Study of the Conditions Necessary to Secure the Best Results—Checking Welders' Ability—Tests for Correct Welding

BY G. O. CARTER\*

THE extent to which welding and cutting are employed in the major industries is not generally known. For example, there are 24 distinct uses of oxygen and acetylene, separately and as oxy-acetylene, in a steel mill. In some mills there are as many as 50 points where oxygen cylinders are supplied from the storehouse. Many other industries utilize welding and cutting in almost as many ways, and in many instances a single storehouse supplies a dozen or more shops of an establishment. The problems of distribution of the gases and the efficiency of application are, therefore, numerous.

Some managers may conclude, after reading this article, that welding and cutting are being fully utilized in their plants and that they are getting the best obtainable efficiency out of applications of these processes. Judging, however, from discussions of the subject with many executives, managers are just beginning to study welding and cutting. The tendency is definite, nevertheless, and it is attributable to the strides that have been made recently toward scientific standards in the matters of equipment, supplies, operative procedure and testing.

Study of established applications ought to interest almost every manager, and further use of the processes should result in large savings by replacing more expensive methods of production and by obviating the necessity for purchasing new equipment when breakdowns occur, to say nothing of reducing operating delays that are common in connection with mechanical replacements.

The whole history of welding is that its use so abundantly compensates the user that time spent in studying its applications is always paid back many times over. We must grant, however, that in the past there have been conditions which might justify managers in hesitating to use welding on some kinds of repair work, and the same considerations have warranted some doubt on their part concerning the advisability of some welding applications, such as the welding of pipe lines and pressure vessels. Fortunately, research and engineering have now surrounded welding with such practical safeguards in respect to correct practices and adequate tests that dependable results can now be definitely counted on; and the progress that has been made amply justifies conservative managers, however skeptical heretofore, in making a fresh investigation of modern welding as an operation capable

of improvement and development along standard lines of practice.

It is true that research and development have trailed behind the rapid growth in the use of welding and that the welder too often has been obliged to be a law unto himself—the judge of how his work ought to be done and of its final fitness. In the majority of establishments welding is the one industrial operation that the superintendent and master mechanic have been inclined to leave to the individual workman, or at the best to a foreman. Still, welding is very well managed in some plants and shops and it is these, rather than the less carefully managed ones, that show what welding can accomplish where correct practices are followed and when the managerial heads take advantage of late developments in welding the same as they do of advanced practice in other operations in their plants.

The day of managerial study of an attention to welding has definitely arrived, though tardily, as compared with cutting. Oxy-acetylene cutting differs from welding because the cutting jet is the equivalent of a machine tool; it will cut iron or steel where it is directed. The cutting process is one which saves a great deal of irksome manual work in cutting out rivets, severing plates, bars, shafts, etc., and, outside of its economy, is very popular with mechanics. The cutting process has quite naturally taken its place in production work in foundries, boiler shops, structural shops and similar places, and has therefore received considerable managerial attention, but even with this process altogether too much has been left to the operator.

#### Checking the Ability of Welders

Welders can and should be checked regarding their personal ability. Very simple tests soon indicate whether an operator of the welding torch is capable of making satisfactory welds. If he is working on steel plates, pipe or sheets, sample welds in the form of test coupons can be pulled in a physical testing machine and positive results noted. Average operators should produce welds stronger than 45,000 lb. per sq. in. and very good operators better than 55,000 lb. per sq. in., using Norway iron filling wire and joining sections of average boiler plate. What engineer would not be impressed by such results as compared with the strength of riveted construction?

Should a pulling machine not be available, a welded coupon may be tested by bending in a vise. The weld should be level with the face of the vise and the test

\*Consulting engineer, Linde Air Products Co.

piece should be bent toward the side from which welded. A good weld will bend at least 30 deg. in heavy strips, or to 90 deg. in sheet steel welds. This test is easy to make and has been used for years in checking welding ability.

Employers should not be disappointed if their supposedly best operators sometimes fail to make good test bars. A little study will reveal the causes of failure and point the way to avoid or correct them; and this only emphasizes the necessity for ability tests at reasonable intervals. By pursuing this course, managers can make sure that their welders are capable before assigning them to important work. But dependence on the ability of welders should be supplemented, whenever feasible, by the testing of their completed work.

It is generally admitted that welding is a thoroughly sound practice if properly done, but in some quarters there is an erroneous impression that it is almost impossible to know when welding is properly done. Therefore, although welding is giving better results than any other form for joining iron or steel pieces, it is not used to anything like the extent that it should be used. Getting proper welding is up to plant managers. Managers should make sure that their welders are capable of doing excellent work and see that they do it. Welders should be supplied the means of producing sound welds (one of the prime essentials is high-quality filler rods) and their work should be checked by as severe tests as possible. If these things are done, the high quality of the resulting work will be assured.

#### Welding Ammonia Receivers

As an interesting illustration, attention is called to one of the many large industries where welding has grown to be essential—making ammonia receivers for refrigeration plants. Riveted seams in ammonia receivers gave no end of trouble before welding was introduced; but, in taking up welding, the refrigeration industry had to insist on high quality work, as leakage of ammonia is very objectionable. Throughout this industry the necessity of checking the work of operators is recognized. Managers, superintendents and foremen make it their business to know about welding and the handling of welders and thus assure dependable welds. The result of this application, after the welding of tens of thousands of receivers, has been to firmly establish confidence in welding in the refrigeration field.

Welding of enameled tanks, the welding of rear axle housings for automobiles and auto trucks and many other interesting branches of industry in which welding is now a recognized production factor might be noted; but they would only serve to illustrate one or more properties that, in the welding of ammonia receivers, have been highly developed—the gas tightness of joints that must not leak, the strength of joints that must not yield under high internal pressure, resistance to fatigue and vibration under internal tension. It was but a logical step from ammonia receiver welding to general pipe welding as now practiced—the welding of gas pipe lines, oil pipe lines, water pipe lines and steam pipe lines.

#### Tests to Determine Correct Welding

Now let us consider some of the tests that can be employed to prove that any given piece of welding work is right. Industry is convinced that wherever hydrostatic pressure in excess of the working pressure can be applied it should be utilized as part of the test. While the pressure is on the work, repeated blows of a suitably weighted hammer should be given to the welded section. If there is a serious defect in the weld, this combined pressure and impact test will show it up. What manager would be in doubt as to the

strength and durability of welded pipe lines, storage tanks or pressure vessels that had passed a test of double the proposed working pressures and then hammered?

A feature of one other form of welding will be touched upon, as it offers big returns to the managers utilizing it. Repair welding of castings, no matter how large, can be made almost 100 per cent successful provided proper preheating and annealing facilities have been used as an important part of the work. Broken castings can thus be repaired in a fraction of the time that would be required for replacement and at a cost far less than that of replacement or of any other method of repair. There are single establishments having repair welding shops that average one big welding job a day, effecting the saving of tens of thousands of dollars yearly. Such shops should be as well organized and equipped as a machine shop or a foundry and have adequate preheating and annealing facilities.

#### Engineering Advice Available

Any investigation of the possibilities of the welding and cutting process as time and money savers should include the engineering advice which is available to those who seek it. Many of the manufacturing and supply companies maintain engineering and research departments. These devote their attention exclusively to the problems which come to them from the users' own work, and to the developments of the industry through aid rendered to present and potential users of gas welding and cutting. Standards of practice based on a contact with actual work being done in hundreds of plants have been well developed.

A large amount of information from these engineering and research activities as well as specific applications are featured by the trade journals which are devoted to the welding industry and other papers. These journals should be utilized for keeping abreast of current developments.

Because the oxy-acetylene process is a comparatively new tool in the hands of American industry, many users of the process are not fully aware of the tremendous strides that have been made in the direction of those standards of practice, tests, etc., which have marked the progress of other processes or operations that are to-day taken for granted as being in sound practice in every respect. There is hardly any feature of plant management and operation where time spent in study will pay as large dividends as in this field.

#### Luxemburg's Recovery in Iron

Luxemburg previous to the war was no small factor in the world's output of steel and iron, ranking equal to Belgium in 1912 and 1913. Like Belgium, it suffered severely from the war's devastation and its recovery in productive efficiency has been slow. In the first ten months of 1921 pig iron and steel output reached an average of 76,180 and 59,690 gross tons per month respectively. In 1920 the figures were 58,000 tons per month for pig iron and 49,000 tons for steel. In 1913, however, Luxemburg produced 209,000 tons per month of pig iron and 109,000 tons per month of steel. In the last two months reported—September and October of 1921—the recovery had reached more than 90,000 tons per month for pig iron and nearly 80,000 tons per month for steel, considerably exceeding Belgian output and nearly twice that of Canada.

The Bessemer Limestone & Cement Co., Youngstown, Ohio, has contracted to supply the flux stone for the blast furnace of the Trumbull-Cliffs Furnace Co. over the first half of the year at the rate of 2000 tons weekly. The company has sold upwards of one-sixth of its maximum output of cement for delivery this year.

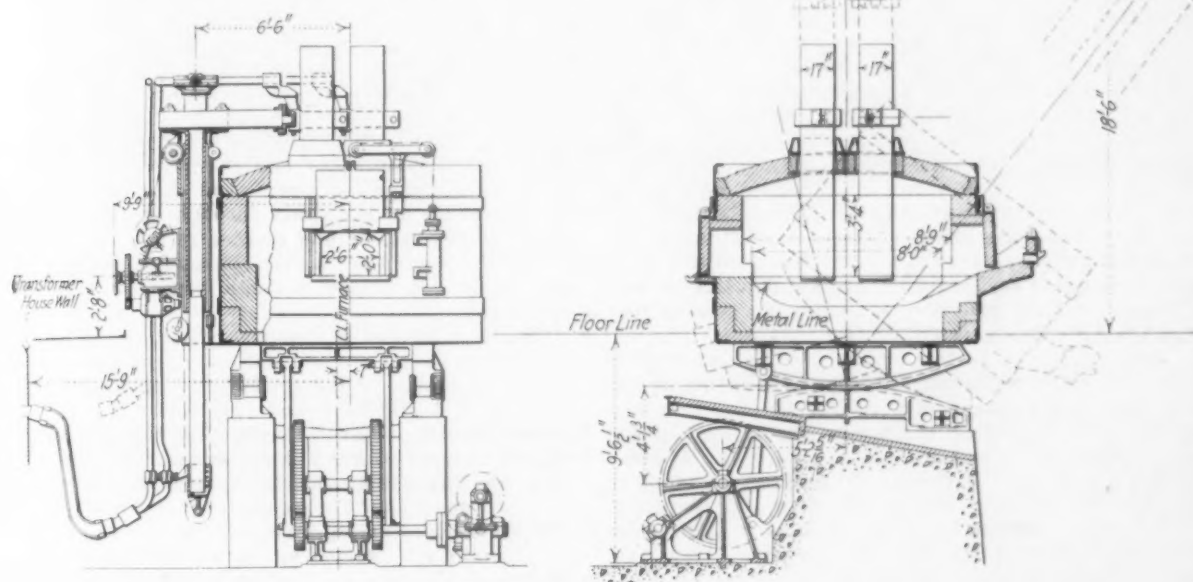


## NEW 7-TON HEROULT FURNACE

### Details of Design Capable of Employing Mechanical Instead of Hand Charging

A new type of Heroult electric steel furnace has been designed by the American Bridge Co., 30 Church Street, New York. It is a 7-ton furnace, details of which are reproduced in the illustration. It is a departure from the other standard type of 1, 2, 3, 6 and 15-ton capacity in that arrangements are made for the use of a mechanical charger. A description of the new 7-ton type, furnished by the company, follows:

The lift of the electrode is extremely high and makes it possible to use a mechanical charger or scrap buckets without the possibility of breaking electrodes. The clearance is lower than in the



earlier furnaces and the only consideration to be taken into account for the crane height is the service for the electrodes. In case the furnace is located on a platform, the transformer can be placed underneath the furnace floor, giving a clear floor for working purposes. The furnace can be built either with the electrode supporting mast opposite the spout with two side doors or with the mast on the right or left side, with the charging door opposite the spout and one smaller side door.

The furnace shell is of the usual strong cylindrical construction, placed on rockers of special curvatures. In tilting the furnace the spout travels downward and slightly forward. It is therefore possible to rest the

ladle underneath the spout in pouring the heat. The tilting mechanism is located in a comparatively shallow pit underneath the charging level out of danger of damage. The tilting mechanism is of rugged construction, operated by a powerful electric motor. The electrode winches with their motors as usual are located on the electrode supporting mast, with the minimum length of steel cable for lifting the electrodes. This feature is important, as there must not be any lost motion between the winches and electrodes, in order to obtain good current regulation. In regulation the electrode is frequently moved only a small fraction of an inch at a time.

### Inquiry as to International Harvester Co.

WASHINGTON, Jan. 31.—The Senate has adopted a resolution offered by Senator Norris of Nebraska, directing the Attorney General to inform the Senate what action, if any, is contemplated by the Department of Justice to bring about a modification of the decree of the court against the International Harvester Co. Senator Norris in his resolution contends that the consent decree agreed to on Nov. 2, 1918, by Attorney General Palmer provided that the International Harvester Co. should divest itself merely of certain minor and unprofitable properties. The resolution says that the report of the Federal Trade Commission under date of May 4, 1921, shows that the consent decree would leave the dominant elements, the McCormick and Deering plants, still in possession of the International Harvester Co., and would not result in effective competition and in reduced prices of farm implements to the farmers.

The resolution also contends that it is necessary to

procure complete separation of the McCormick and Deering interests, and calls upon the Department of Justice to make known what plans, if any, are contemplated to bring about a modification of the decree in order that it may comply with the judgment rendered by the court. In case such course is not practicable, the resolution says it is desired to know whether the Department of Justice contemplates any other independent action against the International Harvester Co. "for the purpose of eventually restoring competitive conditions between the various corporations" of the International company.

It is planned to put into operation this week two more sheet mills at the new plant of Follansbee Bros. Co., Pittsburgh, at Toronto, Ohio. This plant started up Jan. 16 with the operation of its bar mill and two sheet mills. No steel yet is being made at this plant, which for the time being is served from the company's original unit at Follansbee, W. Va.

# Preparing and Distributing Powdered Coal

## Modern Seamless Steel Tube Plant Adopts Pulverized Coal as a Fuel—Details of System in Use for Furnaces and Boilers

BY E. C. GREISEN

**S**ELECTING the proper fuel for a plant containing a variety of furnaces requires a thorough knowledge of the combustion of the various fuels available, temperatures employed, adaptability, and cost per B.t.u. or per ton of finished product produced.

Two methods are available for obtaining approximate data, one being a careful observation and study of data on existing installations, and the other, actual experiment. The Detroit Seamless Steel Tubes Co. engineers chose the latter method. Pulverized coal appearing to be the fuel best adapted to meet their requirements, they installed, in the early part of 1918, experimental equipment for firing one 4-door annealing furnace at the West Jefferson Avenue plant. The results obtained demonstrated the advantages of pulverized coal over other forms of fuel they were using, and it was therefore incorporated in the plans for the new Warren Avenue plant. After a careful inspection of several recent pulverized coal installations the order for the complete coal crushing, drying, pulverizing, distributing, storing and burning equipment was placed with the Allis Chalmers Co. in June, 1919.

Two important factors enter into the success or failure of any installation: First, the selection of the best equipment obtainable; second, the erection and operation by competent engineers. As minor changes are required on all installations of this type, in order to obtain maximum efficiency, too much care cannot be taken in the selection of the engineers and operators.

A brief description of the flow of coal in this system from the track hopper to the high-pressure distributing tank is best explained by reference to the sectional diagram of the system.

From the coal car (1) the coal flows into track hopper and thence through feed hopper onto pan conveyor (4). The latter forms a feeder for the spiked tooth crushing roll (5), the conveyor and crusher being

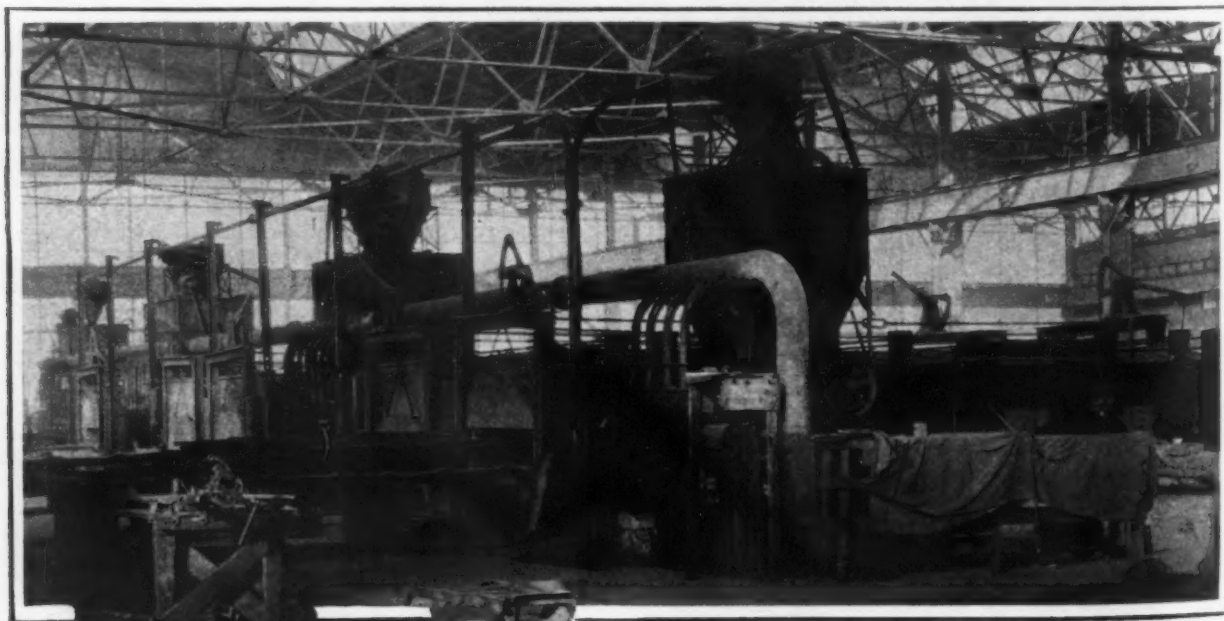
driven by a motor (6). The spiked tooth crushing roll reduces the run of mine coal to  $1\frac{1}{4}$  in. and finer.

From here the coal is spouted to elevator (7) and then into conveyor (8) which distributes the coal over bunker (10). Bin gates (11) permit the coal to flow onto belt conveyor (12). The bin gates are made adjustable, to regulate the height of the ribbon on the belt conveyor. At the head end of the belt conveyor is a coal disintegrator (13) which reduces the  $1\frac{1}{4}$ -in. coal to  $\frac{1}{2}$  in. and finer. The coal, then being of proper size for economical drying, passes into an Ebro type dryer (14), discharging thence through hood (20) to feed spout (21).

The products of combustion are removed from the dryer by exhaustor (15) and conveyed to cyclone collector (17) through a pipe. Coal dust, which is held in suspension by the draft through the dryer, is removed in the cyclone and spouted to the bin. The belt conveyor under the bunker, exhaustor, disintegrator and dryer are driven through countershaft from a motor (18).

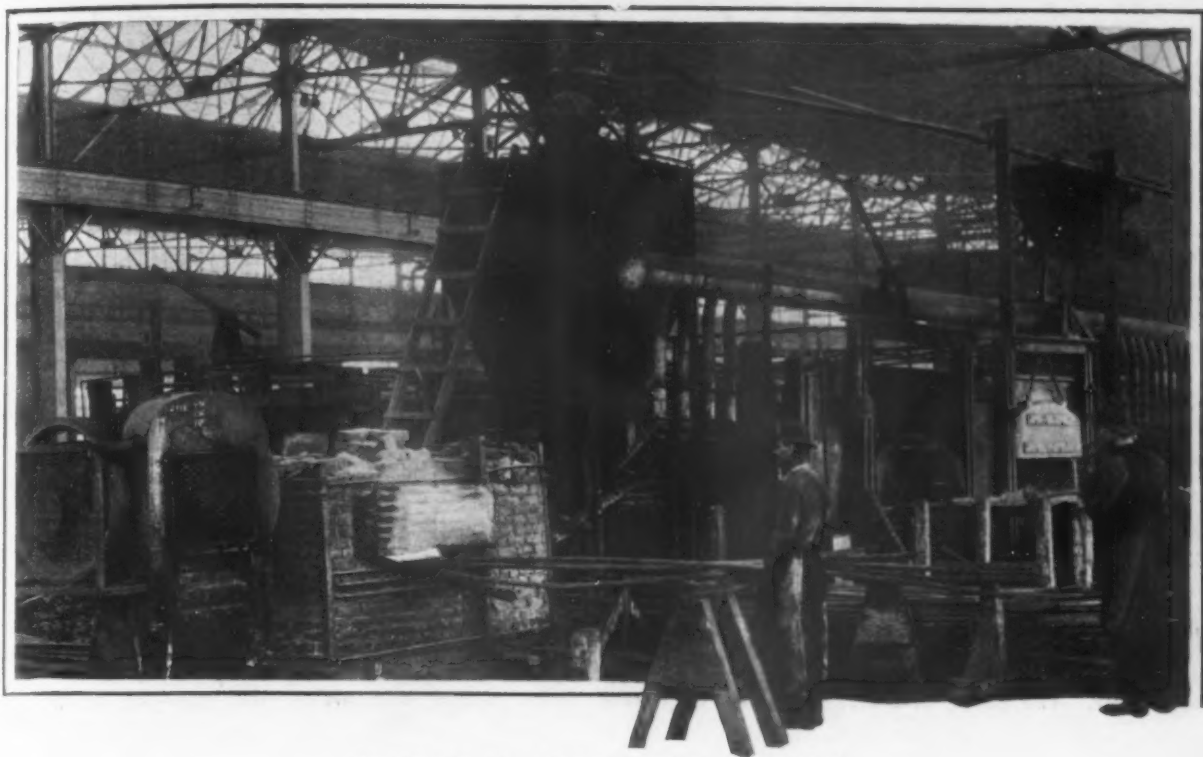
Stack (19) has a damper, which is closed when dryer is in operation, and open during standby period, to permit escape of the products of combustion. Elevator (22) driven by motor (23) raises the dried coal to dried coal bin (24). Feeder (25) regulates the flow of coal to the compeb mill pulverizer (26), the pulverized coal discharging through casing (27) into pulverized coal elevator (31) through spout (30). Feeder and compeb mill are driven by motor (28).

Elevator (31) driven by motor (32) raises the coal to storage bin (33), from which it flows by gravity into a high-pressure coal tank (36), through rotary coal gate (34) and high-pressure coal valve (35). The high-pressure coal tank rests on a scale, the connections from tank to storage bin and distributing line (45) being flexible. The high-pressure coal valve and ro-



Six Tube-Annealing Furnaces, with Storage Bins, Feeders and Air Supply Equipment, Served by High-Pressure Distributing Line





Pointing Furnaces Using Pulverized Coal as Fuel

tary coal gate are operated by levers. The two-way valve (41), operated through chain (42), directs the flow of coal to either distributing line.

#### Distribution of the Pulverized Coal

In the plot plan are shown the distributing lines leading to the various bins at the furnaces and boilers. A  $\frac{3}{4}$ -in. air line, with connections at intervals to 3-in. distributing line, is used to free coal line if it should become clogged. Switching valves located near storage bins permit filling of bins through branch lines. The distributing lines from the coal plant to the main building are placed under ground, to eliminate interference with the operation of the yard crane.

Coal for the piercing mill is injected into the combustion chamber by three screw-type coal feeders, driven through adjustable friction disks from a common constant speed motor. Contrary to common practice, the air for combustion is supplied by one blower. A 10-ton capacity steel bin allows for sufficient storage for a day's run.

Each annealing furnace is supplied with coal from a  $2\frac{1}{2}$ -ton bin, and the necessary air for combustion for

the six furnaces from a single blower. The required amount of air for each burner is regulated by means of a slide gate.

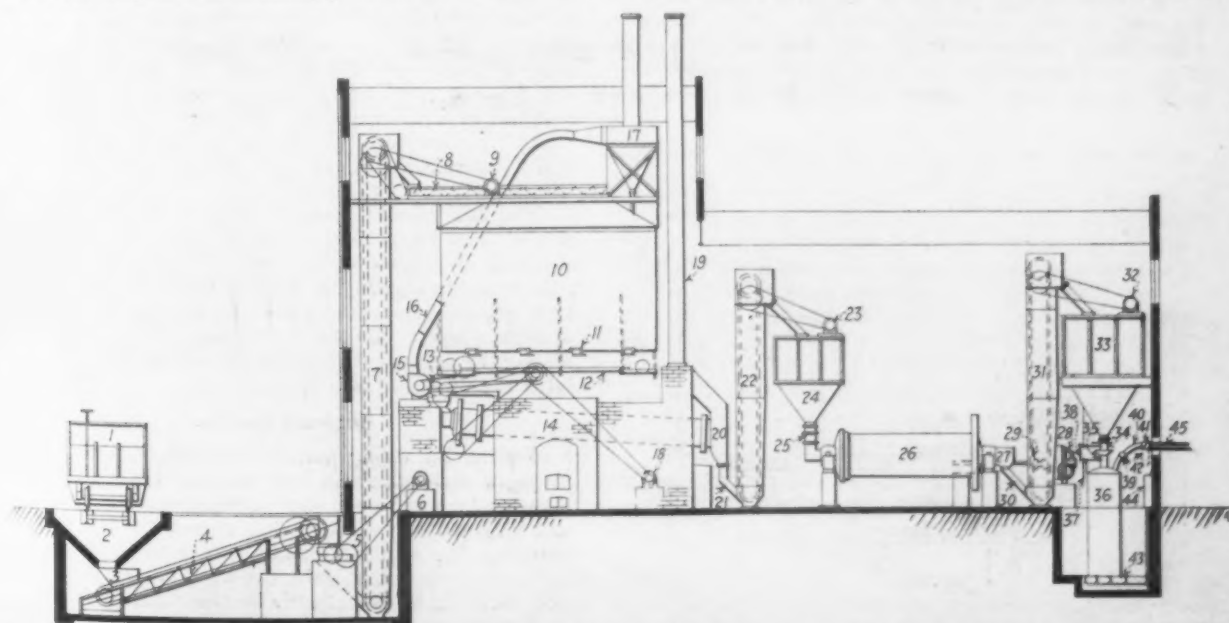
The pointing furnaces receive their supply from a  $2\frac{1}{2}$ -ton bin, and the necessary air for combustion is furnished by a No. 4 type "P" American Blower Co. blower.

A 10-ton bin at the boilers supplies both the 180-hp. and 300-hp. Erie City boilers, the 300-hp. boiler being equipped for use only in case of emergency. The flues from the annealing furnaces enter into a common flue, and dampers permit passing the gases through the 300-hp. boiler or to the stack. This boiler is used for heating the buildings, and the 180-hp. boiler for supplying steam to the pickling vats and service pumps.

The coal pulverizing plant has a guaranteed capacity of 3 tons per hour, and under normal operating conditions 10-hr. operation furnishes sufficient fuel for the entire plant for 24 hr.

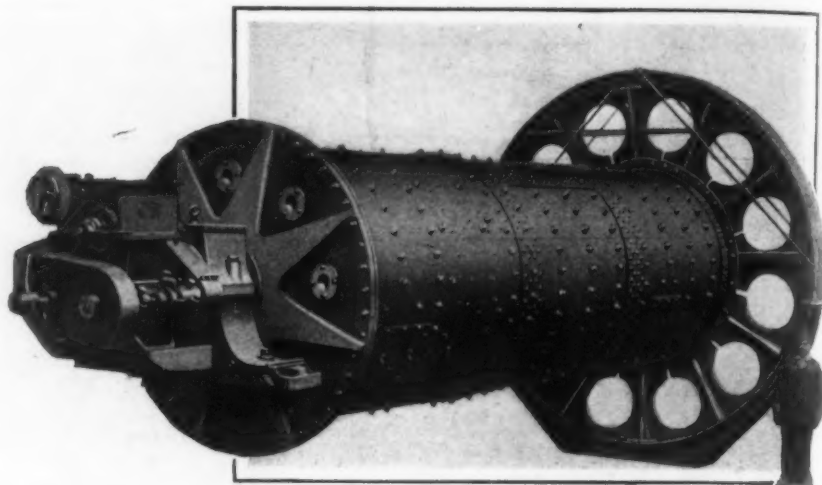
#### Coal Drying

The low temperature at which distillation of the volatile matter in coal occurs requires a dryer designed



Cross Section Through Preparation Plant, from Receiving Hopper at Left, Through Bunker and Dryer in Center, Pulverizing Mill and Pressure Tank at Right

Some Idea of the Size of the Compeb Grinding and Pulverizing Mill May Be Obtained from the Man Alongside. The shell is made of heavily riveted steel plates.

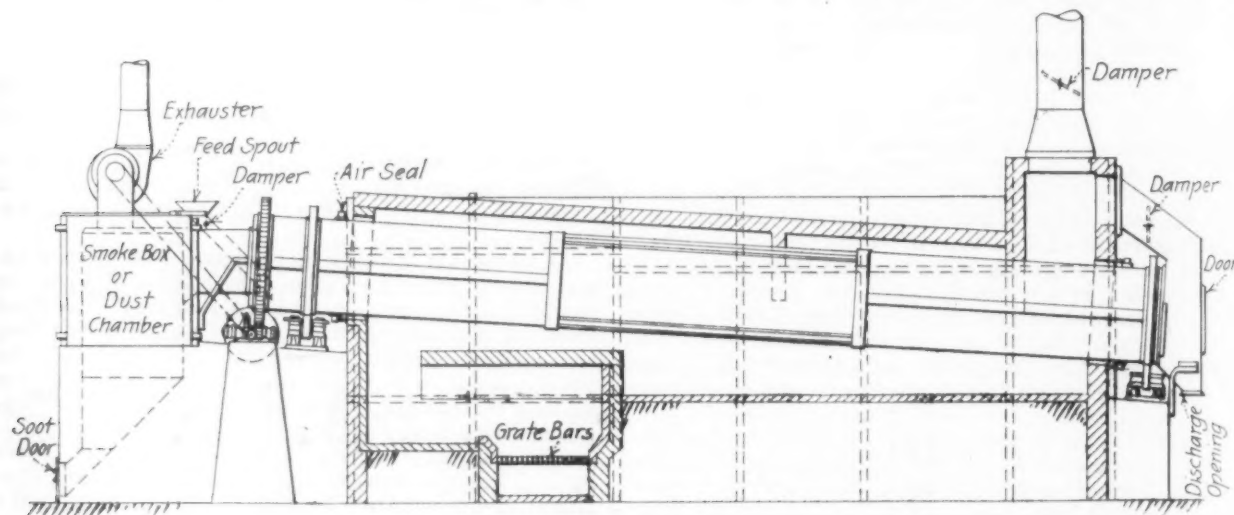


to meet this condition. In the Ebro or inclosed type of indirect-direct heat dryer, the shell is inclosed in a brick housing with the grates or combustion chamber located at the feed end of the dryer. The hottest flames are diverted from immediate contact with the shell by means of a protecting arch, and pass through the housing to the discharge end, heating the shell externally. The gases, considerably cooled, then pass

cyclone collector connected to the atmosphere by a stack.

#### Coal Grinding

A compeb mill, as shown, pulverizes the coal to a fineness of 90 to 95 per cent through a 100-mesh screen. The preliminary grinding compartment is lined with 3-in. chilled iron plates, the grinding media being



Ebro Type of Rotary Dryer for Pulverized Coal

to the interior of the shell through a hood at the discharge end.

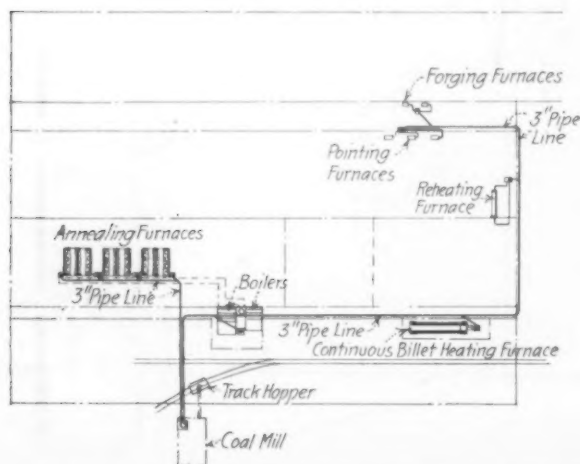
"I" beam lifters placed in the dryer shell shower the coal, thereby permitting the hot gases to come in contact with each particle of coal. The moisture laden gases are drawn from the shell by an exhauster connected to the feed end housing, and discharged into a

forged steel balls ranging in size from 2½ to 4 in. in diameter. The grid frame type division head retards the flow of coal to the finishing compartment, until it has reached a fineness that will allow it to pass through between the grid bars. The grid bars, made of tool steel with ends upset and ground for specified openings, are held in position by manganese keeper rings and manganese division plates. The cast spiral in the grid supporting frame advances the material to the lifters, which discharge the coal onto a central cone and into the finish grinding compartment.

The fine grinding compartment is lined with 1¼-in. chilled iron liners and charged with 1¼-in. diameter concave as a grinding medium. The discharge from the mill is accomplished by placing perforated manganese steel plates, lifters and a central discharge cone at the discharge end. As the mill operates in a horizontal plane, the quantity of material fed to the mill regulates the fineness, to a large extent.

#### Blowing the Coal

During the filling period the rotary coal gate, high-pressure coal valve and vent valve of the high-pressure blowing tank are open, the high-pressure air line valve and straight way valve being closed. When the scale indicates the required quantity of coal in the blowing tank, the rotary coal gate, the high-pressure coal valve and vent valve are closed, in the order named. The high-pressure air line valve is then opened, and pressure in tank brought up to air receiver pressure. With

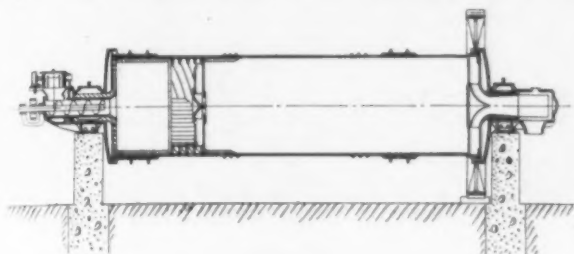


Layout of Pipe Lines and Connections to Distributing System at Plant of Detroit Seamless Steel Tubes Co.



the two-way valve set for the proper distributing line, the straight way valve is opened, and coal delivered to any desired bin by setting the two-way valve at the bin before blowing.

The system works on the injector principle, the amount of air required per pound of coal being proportional to the pressure used and the distance the coal is to be transported. The outer pipe, which surrounds the injector pipe inside the blowing tank, is adjustable, and maintains a clear passage for the air

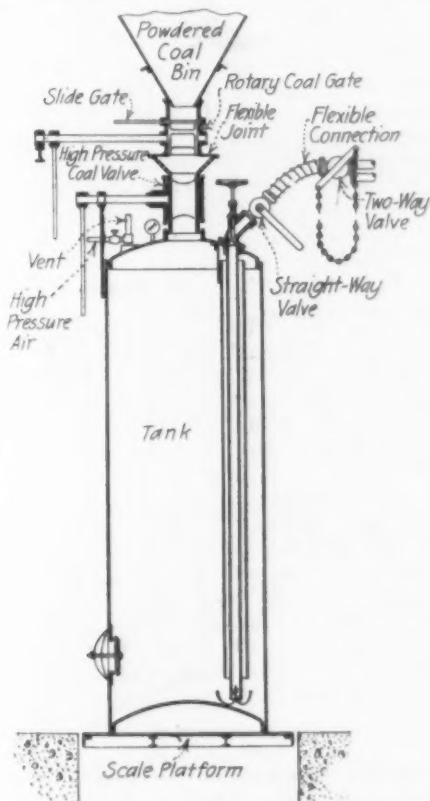


Longitudinal Section Through Compeb Mill, Which Pulverizes the Coal

from the inlet valve to the injector pipe at bottom of tank. The greater the distance from the end of the outer pipe to the injector pipe, the greater is the proportion of coal to air.

To obtain maximum efficiency, adjustments should be made on each installation until only sufficient air is used to transport the coal the maximum distance without clogging the line.

If the operator wishes to transfer part of the coal



Pressure Tank and Connections, Showing Method of Operation

with the blowing tank to another bin, the straight way valve is closed and the purge line valve opened to clear the distributing line. The two-way valves at the furnaces are then adjusted and the straight way valve opened. The amount of coal conveyed to each furnace is weighed, permitting accurate records of consumption per ton of finished product for each operation.

At the regular monthly meeting of the Detroit Chapter of the American Society for Steel Treating, Monday evening, Jan. 23, Henry Traphagan, consulting metallurgist, Toledo Steel Castings Co., Toledo, Ohio, discussed "Fatigue in Steel."

## Metallurgical Coke by Froth Flotation Process

The beneficial effect on the physical strength of metallurgical coke made from coking coals after treatment by the Froth flotation process of cleaning has been further demonstrated by practical trials that have taken place in South Wales under the supervision of Minerals Separation, Ltd., according to Ernest Bury in the *London Iron and Coal Trades Review*. The results of one of these tests are set out in Table I:

Table I—Test of Metallurgical Coke Made from Coking Coal Cleaned by the Froth Flotation Process

Analysis, etc.	Coal	Flotation Coke	Ordinary Coke
Ash (per cwt.)	4.50	6.00	.....
Sulphur (per cwt.)	0.97	1.14	.....
Volatile matter (per cwt.)	20.64	0.28	.....
Moisture (per cwt.)	13.45	0.86	.....
Specific gravity	.....	1.39	.....
Porosity	.....	1.40	.....
Crushing strength (lb. per sq. in.)	.....	2,076	1,500 and under

Further research has demonstrated that, where the coking properties of a coal are neutralized by the presence of fusain, differential flotation may be applied for removal of the latter, leaving a residual fuel strongly coking in character. Success in this direction is shown by the series of semi-commercial tests on Scottish coals given in Table II, which before treatment were very inferior in coking properties (the coking constituent thus separated is denominated bright in the table).

Table II—Samples of Coke Made from Scottish Coals After Treatment by the Froth Flotation Process

Material Product	Weight, Per Cent	Moisture, Per Cent	Ash, Per Cent	B.t.u.	Volatile Matter, Per Cent	Coke
Original	100.0	..	5.74	13,273	24.32	.....
Bright..	80.0	8.0	4.34	13,760	26.12	Good
Dull...	20.0	..	10.36	12,877	25.73	.....
Original	100.0	..	15.82	12,081	22.36	.....
Bright..	70.5	18.0	4.56	13,561	26.52	Very good
Dull...	29.5	..	50.08	.....	17.92	.....
Original	100.0	..	8.30	12,877	25.54	.....
Bright..	53.7	6.4	4.90	13,273	23.60	Good
Dull...	46.3	..	11.78	12,680	22.69	.....
Original	100.0	..	8.30	13,075	34.65	.....
Bright..	63.3	..	4.34	13,650	33.37	Very good
Dull...	36.7	..	11.58	12,877	33.21	.....

This section of the research is in its early stages, and it is not yet to be inferred that the minerals separation processes are applicable to all non-coking coals for obtaining a coking product. It may, however, be taken as established that, where the non-coking properties of a coal are due to the presence of fusain, the fusain can be removed, leaving an excellent coking product.

This discovery marks a new stage of development in the preparation of metallurgical fuels. Many iron ores are at present unexploited owing to a dearth of coking coal, and the differential method may well lead to far-reaching economic developments in those countries at the moment industrially impotent in so far as concerns coking coal.

## Building Construction in 1921

F. W. Dodge Co. reports that the total amount of construction contracts let in the 27 Northeastern States, during 1921, amounted to \$2,359,018,000, which is about 8 per cent less than the \$2,565,000,000 of 1920. The character of construction differed markedly from the previous year, for 37 per cent of the total, or \$880,052,000, represented residence building, an increase of 54 per cent over 1920. Industrial buildings dropped to 7 per cent of the total, at \$173,325,000.

The Kentucky Refractories Corporation, Russell, Ky., plans shortly to erect a plant at Russell. The first unit is to have a daily capacity of 75,000 standard brick. The corporation has 3000 acres of clay lands adjacent to the plant location. The officers of the corporation are: C. K. Turley, president; R. T. Hipp, vice-president and general manager, 1016 East Main Street, Massillon, Ohio, and A. J. Ivey, secretary and treasurer.

## TO RELIEVE FARMERS

### Many Remedies Proposed at Agricultural Conference at Washington

WASHINGTON, Jan. 31.—The iron and steel industry, as is the case with regard to all other industries, as well as the financial and commercial life of the nation, recognizes the necessity of restoring the purchasing power of the farmer in order to bring about a return of normal business conditions and this is the outstanding feature which gained attention at the conference here last week of agricultural interests of the country, called by President Harding through Secretary of Agriculture Wallace. It obviously remains to be seen what the actual results of the conference may be, but there was confident hope expressed by many delegates who attended that a constructive program was adopted which at least aimed in the right direction. This opinion disregarded some of the artificial and absurd remedies suggested, and also discounts the activities of "blobs" and disgruntled groups, which, as was to be expected, were present. At the same time, there are those who have grown skeptical of the advantage to be gained by conferences, hearings, investigations, etc., which, despite their numbers in the past, appear to be more numerous than ever until many consider there is a positive plethora of them, some of which frequently do more harm than good. It is pointed out that some of these undertakings seek to fly directly in the face of natural economic laws and consequently can do injury only, instead of either permitting such laws to work their way alone, or to assist them by sane methods.

Delegates to the agricultural conference insist that they have resorted to the latter course, and, for one, have done good by focusing the attention of the nation upon the depressed condition of agriculture as could not have been done in any other manner.

Recommendations made included:

Passage by Congress of laws providing intermediate credits for farmers through commodity financing, pending which the War Finance Corporation would be continued.

Amendments to the Federal Reserve and farm loan acts to provide easier and freer money for farmers.

Investigation by Congress of the subject of crop insurance.

Constitutional amendment prohibiting issuance of tax free securities except bonds and other obligations of Federal farm loan banks.

Reenactment of an excess profits tax and equal consideration for agriculture with other industries in any tariff policy. Opposition to any consumption, sales or manufacturers' tax.

Representation by the United States "in a conference with economic and financial reconstruction of Europe" in order to learn what the United States can do regarding the re-establishing of international credit.

Reduction of freight rates on farm products, live stock and products of allied industries to the level existing before the general rate advance of Aug. 26, 1920, and restoration of certain rate-making powers to state railroad commissions.

Readjustment of rates on other commodities to follow as quickly as possible.

Legislation to prevent the railroads from including the "land multiple" in making up their revaluations.

Development of the Mississippi, Ohio and Missouri rivers as arteries of commerce and establishing of joint water and rail rates.

Opposition to repeal of the Panama canal tolls.

Development of hydroelectric power projects to make current available to the smaller consumer on the farm and in the village and closer co-ordination of railroad, waterway and highway transportation.

Appointment of a commission urged to work out a national land policy, including reclamation, irrigation, grazing and colonization problems, in co-operation with similar bodies in the various states.

Participation by railroad labor and railroad corporations in the general price "deflation."

The last named recommendation was adopted after the conference voted to strike out a recommendation for the repeal of the Adamson eight-hour law and the "bringing down" of wages of railroad and industrial labor to a parity with returns received by farmers, which had been urged by President Stackhouse of the Implement Manufacturers' Association. President Samuel Gompers was the principal opponent to the recommendation urged through Mr. Stackhouse. The

substitute adopted was declared by one delegate as being a "milk and mush" affair.

The conference also approved a proposal that the St. Lawrence-Great Lakes waterway project be completed and after a heated debate took favorable action on the proposal to repeal the 6 per cent guarantee clause of the Esch-Cummins act.

Some of the recommendations adopted are opposed by industrial and other interests of the country and undoubtedly will be fought if they are put in the form of proposed legislation. Among them are those which are considered paternalistic and calling for distinctly class legislation. One is the recommendation for a constitutional amendment, unlikely of passage if it ever comes before Congress, prohibiting issuance of tax free securities "except bonds and other obligations of Federal farm loan banks." Another is the recommendation for reenactment of an excess profits tax while still another relates to the opposition of the conference to any consumption, sales or manufacturers' tax.

### Timber Men Behind Great Southern Steel Corporation

The identity of some of those financially interested in the Great Southern Steel Corporation has been disclosed. This company, incorporated in Delaware with capital stock of \$105,000,000, and later granted a charter in Alabama with capital stock of \$500,000, as announced in THE IRON AGE on Dec. 15 and Jan. 12, plans to develop 101,000 acres of iron ore and coal lands located about 65 miles from Muscle Shoals. Among those interested in the company and mentioned as probable directors are P. M. Starnes, 208 South La Salle Street, Chicago, who has large timber holdings in various parts of the country; J. S. Stearns, lumberman with plants at Ludington, Mich.; Judge H. W. Seaman, Chicago, and John I. Beggs, head of the Milwaukee Electric Railway & Light Co., Milwaukee. A formal announcement of the names of the officers and directors, as well as details concerning the plans for the company will probably be given out within the next fortnight.

### Fords Will Help Lincoln Motor Car Co.

DETROIT, Jan. 31.—Henry Ford and Edsel Ford both have stated personally that the Ford interests will come to the rescue of the Lelands and the Lincoln Motor Car Co., Detroit, which is now in the hands of a receiver. The Fords intimated that they would bid at least \$8,000,000 at the receiver's sale next month, and rumor has it that they will bid the price up to \$11,000,000, if necessary.

Both the Fords stated that if the Lincoln organization was purchased, the Lelands would be retained in their present capacities and that no changes would be made except to have the purchasing done under Ford management and to institute Ford manufacturing methods. The Lincoln cars would be sold by present distributors, except where Ford dealers were equipped to do so and could do so to advantage.

### United States Exposition Building in Brazil

The contract for the construction of the exposition building to house the exhibits of the United States at the great Brazilian Exposition next September has been awarded to Dwight P. Robinson & Co., New York, which already has large construction work under way for the Brazilian Government in Northeastern Brazil. Representatives of the company and of Frank L. Packard, architect, of Columbus, Ohio, who will design the building, sailed recently for Brazil to begin the work at once. The exposition will open at Rio de Janeiro on Sept. 7 and will commemorate 100 years of Brazilian independence.

It was recently announced at the White House that the American building would be of permanent construction and so designed as to permit of its being converted into an embassy for this country's diplomatic representative after the close of the exposition.



# New Blast Furnace Replaces Pioneer

Modern Equipment Provided for Warwick Furnace  
Plant—Pre-Revolution Activities of  
First Warwick Stack

CONSTRUCTION of the original Warwick furnace was started in 1737, and the plant was first operated in 1738. It was located on the south branch of French Creek in Chester County, Pa., about 10 miles southwest of Pottstown, where the remains of the furnace are still to be seen. This early plant, probably the largest operating in the Colonies, made many castings for the early husbandry. It is credited with having cast the first of the stoves invented by Benjamin Franklin.

In the Revolutionary period the furnace was actively engaged in casting cannon for the Continental army, and during the activities of Howe's troops in the vicinity of Philadelphia some of the Warwick cannon were buried, for safety, on the furnace property. In the early fall of 1777, before Washington met the British at Brandywine, the American army was encamped for a time at Warwick. The subsequent operations of the furnace are woven into the early history of iron making in Pennsylvania, and the narratives of American manufacture of sixty years ago give prominence to the enterprise at Warwick. It was not until 1867 that this furnace made its last blast, its stoppage being accelerated by increasing difficulties of obtaining charcoal, and also to a great degree by its inaccessible location.

Following a successful campaign of over a century and a quarter, it seemed natural, when a new iron enterprise was formed in the vicinity, that the projectors should perpetuate the name of Warwick. Accordingly, a charter was granted March 30, 1872, to the Warwick Iron Co., headed by Jacob H. Gabel as president. Construction of the new furnace was begun in 1875, and the first blast put on in 1876. The stack, built of brick, banded with iron hoops, rested on masonry columns; its dimensions were 55 ft. in height with a bosh diameter of 16 ft. The furnace was blown with six tuyeres, the blast being supplied by a single 96 x 40 in. by 7-ft. stroke non-condensing engine, while the air was heated in two iron pipe stoves. The ores used were mainly local, and the fuel principally anthracite coal.

In 1877, Edgar S. Cook, who had displayed remarkable ability as a young man in blast furnace prac-

tice, took charge at Warwick, and installed a chemical laboratory at the furnace—one of the first steps in this direction in the East. With the aid of technical advice from the late John Birkinbine, Mr. Cook made changes in the lines of the furnace which, with other improvements, raised the production of iron from 190

to 350 tons per week. From December, 1880, the furnace started on a campaign which lasted five years, the output averaging over 100 tons per day, and the plant proceeded upon a successful career.

In 1892, after a careful investigation of fire brick stoves then in use, Mr. Cook installed a set of three Hugh Kennedy type, each 20 by 60 ft., replacing the iron stoves of the Durham pattern. This radical change brought forth both friendly criticism and skepticism from the leading anthracite iron masters, who at that time were staunch adherents of the iron type stove. The new stoves were designed by Hugh Kennedy, then manager of the Isabella plant near Pittsburgh, and from outward appearances resembled the ordinary dome top type of the present, except

that they were surmounted by a pair of squatty chimneys, which gave them an unusual look.

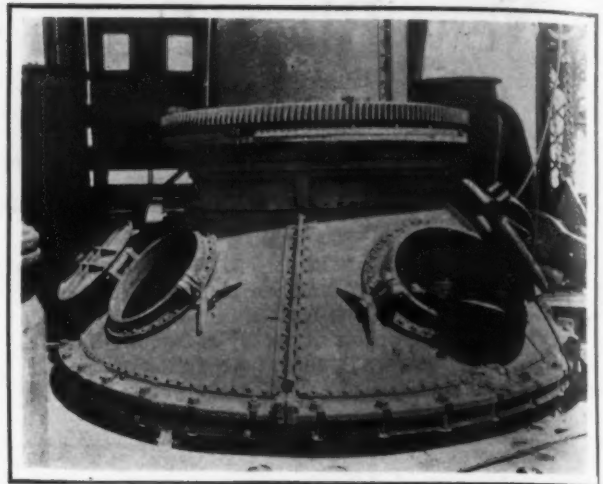
Revival of the iron business, following the long stagnation from the panic of '93, brought much expansion in the industry, and the Warwick Iron Co. was reorganized into the Warwick Iron & Steel Co. in 1899. At this time a new furnace was projected, and construction was commenced in 1900. The program included an entire new plant to supplement the existing unit, with the addition of a pig casting machine of the Uehling type. The furnace was 100 by 22 ft., with four stoves of the same height, and the stack was the first of that size to be built in the East. The lines of the new furnace were obtained by proportionate enlargement of those of the older stack, which had done such good work. But it was found in actual practice that these lines did not give the desired results, and several changes had to be made before the furnace gave satisfactory grades and output.

While the original stack had been improved by the replacement of the Hugh Kennedy stoves by stoves of larger dimensions and of a center combustion type, the



Skip Bridge Has Independent Shear Leg Support. Stair tower at left supports end of trolley beams, 68 ft. from center of furnace

company felt justified in erecting a third furnace to be used as an alternate, in the event that either of the two stacks were out of blast. Accordingly, furnace "A" was constructed, of the thin-lined type, located between the two built previously, and arranged to be used with the stove and power equipment of either No. 1 or No. 2 furnaces. This unit had the general characteristics of the type much exploited some 10 years ago, and was constructed with the top structure in-

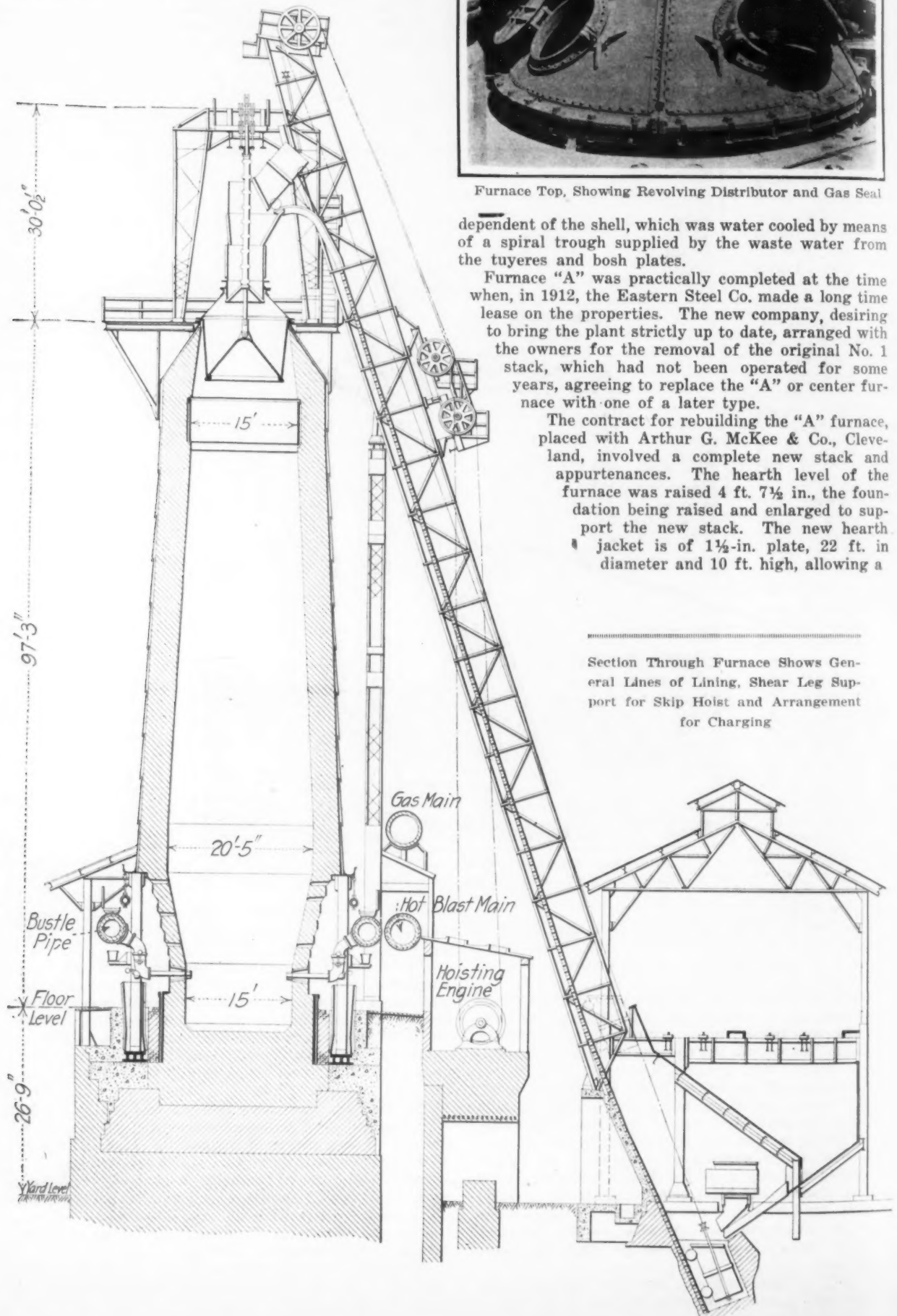


Furnace Top, Showing Revolving Distributor and Gas Seal

dependent of the shell, which was water cooled by means of a spiral trough supplied by the waste water from the tuyeres and bosh plates.

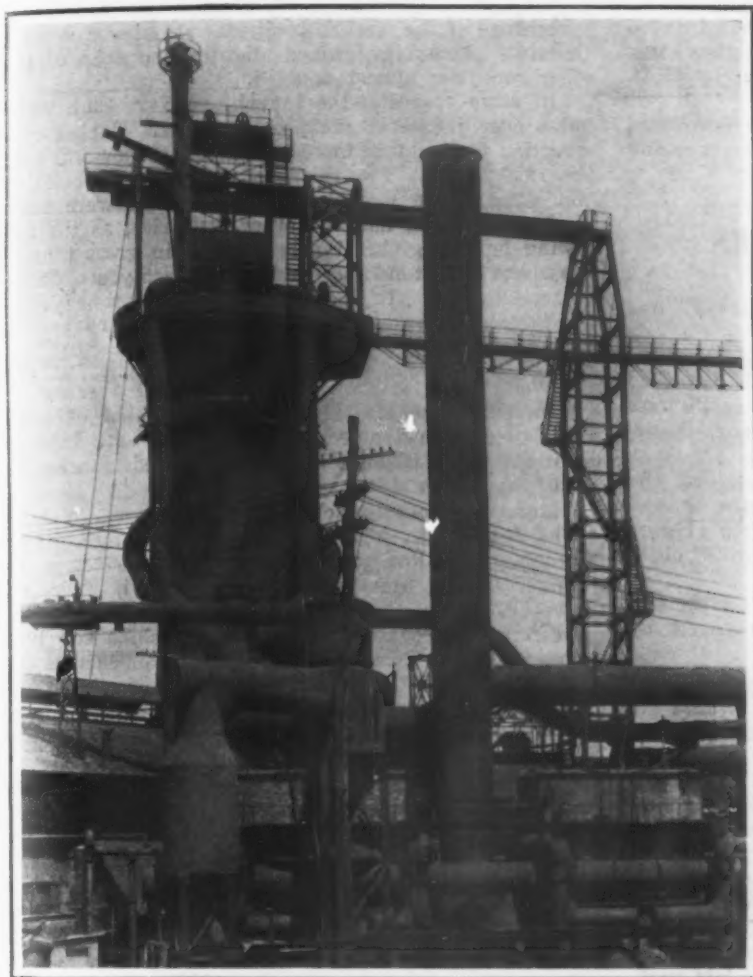
Furnace "A" was practically completed at the time when, in 1912, the Eastern Steel Co. made a long time lease on the properties. The new company, desiring to bring the plant strictly up to date, arranged with the owners for the removal of the original No. 1 stack, which had not been operated for some years, agreeing to replace the "A" or center furnace with one of a later type.

The contract for rebuilding the "A" furnace, placed with Arthur G. McKee & Co., Cleveland, involved a complete new stack and appurtenances. The hearth level of the furnace was raised 4 ft. 7½ in., the foundation being raised and enlarged to support the new stack. The new hearth jacket is of 1½-in. plate, 22 ft. in diameter and 10 ft. high, allowing a



Section Through Furnace Shows General Lines of Lining, Shear Leg Support for Skip Hoist and Arrangement for Charging





General View of Furnace, Showing Trolley Girder and Trolley at Right

hearth diameter of 15 ft., as compared with 14 ft. in the old furnace. The drawing shows the sectional elevation of the furnace, furnace top, skip bridge and stock bins. The tuyere jacket is 19 ft. 6 in. inside diameter, 4 ft. 7 in. high, of 1-in. plate. The furnace shell is of  $\frac{3}{4}$ -in. plate, the mantle ring being of 1-in. plate and heavy angles.

There are eight columns, spaced alternately at 50 deg. and 40 deg. angles. This allows the uniform spacing of the twelve tuyeres, two tuyere stacks being placed in each 50 deg. and one each in 40 deg. space. The columns are of structural shapes, these being considered more reliable and less bulky than cast iron columns.

Hearth and bosh cooling system consists of eight rows of copper cooling plates. The experience of the engineers has brought out the inadvisability of cooling plates above the mantle, and the construction of recent furnaces with few exceptions bears this out. The hearth brick are also cooled by cast iron cooling plates inside the hearth jacket. The new lining consists of approximately 497,000 fire brick, 9 in. equivalents.

The furnace top was entirely rebuilt. A new platform of 5/16 in. plate with solid hand railing is supported by the cast steel furnace top ring and structural brackets. The top structure combines all facilities of a modern furnace top, with a compactness and co-relation of parts not often realized. Three structural "A" frames supporting the trolley beams are mounted on the platform, two of these forming a tower.

A novel scheme was developed to utilize the old vertical hoist tower of the furnace. This was rebuilt and equipped with stairway and platform, and so placed as to support the ends of the trolley beams, thus allowing them to extend to the unusual distance of 68 ft. from the furnace center line. The trolley has a capacity of 25 tons, sufficient to handle the load of the large bell and hopper taken together.

The large and small bell beams, as shown in the the drawing, are supported by the trolley beams, and

are pivoted on a single forged steel shaft with special adjustable bearings. The large beam only is counterweighted, the additional counterweights required being provided at the bell cylinders, which are placed at the cast house level. The bell beams are connected with the bell cylinders by steel cables for closing the bells, the adjustment of counterweights being such that the bells open by gravity.

The skip bridge was raised to conform with the new furnace height, and the angle steepened from 67 deg. to 71 deg. 47 min. from the horizontal. The bridge is supported by a shear leg independent of the furnace stack, and has a plate deck under the rails. At the top of the bridge is an auxiliary trolley beam for handling the bell beams. As the hoist house is under the skip bridge, the skip ropes are brought through the bridge by guide sheaves, as shown in the drawing.

The new large bell is of cast steel, 11 ft. 3 in. in diameter, with 50 deg. slope. The large bell rod is forged steel, 5 in. in diameter. The stock distribution is accomplished by a McKee revolving distributor, equipped for automatic recurrence of a six skip, six position cycle.

Four new downcomers were provided, connecting to the old pipes. The downcomer connections at the top of the furnace are of the McKee patented type, made up of cast steel. They serve as a preliminary dustcatcher, in that the gas must turn at a sharp angle to pass the baffle and enter the vertical outlet, thus causing the particles of stock carried with the gas to strike the end of the inclined pipe, or the baffle casting, and



Furnace Top from Stair Tower, with Revolving Distributor and Downcomer Castings in Lower Part of View

roll back into the furnace. The arrangement of down-comer castings is shown on page 1539, THE IRON AGE, June 9, 1921. One bleeder 36 in. in diameter by 41 ft. high was installed.

Three 75-ton hot metal ladle cars were purchased and put in operation. These are of the mixer type and are motor operated.

## SHIPBUILDING DECLINES

### Falling Off in 1921 of Over 1,500,000 Gross Tons as Compared with 1920

The shipyards of the world during 1921 launched over a million and a half gross tons less of vessels than in 1920, says a statement just issued by Lloyd's Register of Shipping.

In the United States alone, it is pointed out, the decrease was 1,470,000 tons. British yards also showed a decline from the 1920 figure, but this drop of over half a million tons was largely offset by a gain for other countries of 467,000 tons.

The comparison between the launchings for the two years is shown by the following table, prepared by Lloyd's Register, giving the gross tons:

	1921	1920
United States .....	1,006,413	2,476,253
United Kingdom .....	1,538,052	2,055,624
Other countries .....	1,797,214	1,329,789
World .....	4,341,679	5,861,666

While the 1920 total of launchings by American shipyards was greater than for that of either the British yards or those of other countries, it is stated, the lead of 420,000 tons over Great Britain for 1920 was transformed to a British lead of 531,000 tons last year, while the gap of 1,146,000 tons, representing the American lead over other countries in 1920 was converted into a lead of 790,000 tons for those nations last year.

For the first time since the war, Lloyd's Register gives figures of production by German shipyards, and these explain why the aggregate for other countries than the United States and the United Kingdom increased in comparison with 1920, while the American and British totals declined.

Launchings by German shipyards during 1921 are given as 509,064 gross tons, or 42,000 tons more than the gain for all other countries than America and Britain, so that the minor nations, excluding Germany, showed an actual loss on the year's output.

The most significant feature of the German returns, however, is that they show that the shipyards of Germany have now more than regained their pre-war production. Launchings for that country during 1913 aggregated 465,000 gross tons, and as that was the record year for launchings of merchant ships in Germany, last year's total sets a new figure.

While the production during 1921 for the world was 2,803,000 gross tons less than in the record year of 1919, it was more than a million tons in excess of the 1913 world total. The output for the pre-war year and for the record year of production are shown in the following table:

	1919	1913
United States .....	4,075,385	276,000
United Kingdom .....	1,620,442	1,932,000
Other countries .....	1,448,722	1,124,000
World .....	7,144,549	3,332,000

It will be noted that while British shipyards last year launched less in actual tonnage and in the proportion of the world's total than before the war, the other countries showed gains in both respects. While the United Kingdom built considerably more than a half of the world total in 1913, the 1921 output was only slightly more than a third of the aggregate. The following shows the proportion of the annual world output by the different shipbuilding nations before and since the war (by percentages):

	1913	1919	1920	1921
United States .....	8.3	57.1	42.2	23.2
United Kingdom .....	58.0	22.6	35.1	35.4
Other countries .....	33.7	20.3	22.7	41.4

Within the past year, it is shown, the American

percentage of the world's total was cut almost in half, Britain's percentage gained slightly and that of the other countries almost doubled.

In some respects, the launchings for 1921 show gains over those for the previous year. Tanker construction for instance increased almost 65 per cent over the 1920 figure. Two-thirds of this class of building was done in the United States, but gains were made by Great Britain and the other countries, as the following figures, giving the launchings in gross tons of vessels of 1000 tons and over for the two years, show:

	1921	1920
United States .....	690,308	567,000
United Kingdom .....	250,868	65,400
Other countries .....	109,180	8,000
World .....	1,050,356	640,400

Increases are also shown in the number of large vessels being constructed. In comparison with 32 ships of 10,000 gross tonnage and over reported launched in 1920, there were 47 last year.

Motorship construction continues to gain. Vessels to be fitted with internal combustion engines, which were launched last year, total 306,642 gross tons, as against 189,977 tons in 1920. A decline is indicated, however, in the construction of ships fitted with turbines, the aggregate of this class of ships for 1921 being 1,195,000 tons compared with 1,825,000 tons the previous year.

About 40 per cent of the total construction in British shipyards last year was for foreign account, 591,870 gross tons being launched for buyers abroad.

Following Great Britain and the United States in the amount of tonnage launched last year comes Germany, Holland, Japan, France, Italy, and the British Dominions are next, in the order named. Japan and the British Dominions show declines from the 1920 total, but gains were made by the others. The production of these countries, for the two years, was as follows:

	1921	1920
Holland .....	232,402	183,149
Japan .....	227,425	456,642
France .....	210,663	93,449
Italy .....	164,748	133,190
British Dominions .....	129,675	203,644

The total of shipbuilding orders in hand at the beginning of this year, throughout the world, according to the returns of Lloyd's Register, represented 4,457,000 gross tons. As a great part of this has already been launched, however, and little in the way of new work is being placed, the 1922 total of launchings will probably be well below the 1921 figure of 4,341,000 tons.

## Coal and Coke Production

UNIONTOWN, PA., Jan. 30.—Very little change is being shown in coal and coke production in the Connellsville bituminous district. While there is a continued contract inquiry, few contracts are reported and the upward turn is not being manifested so soon as many conservative observers had anticipated.

Coke production in the region, tabulated for the week ending last Saturday, was 86,550 tons.

Officials of the Frick Coke Co. entertained 40 plant officials of their Ronco plant at the Country Club here in recognition of the new regional plant production record set at Ronco in December. W. H. Clingerman, president of the company, and Clay Lynch, general superintendent, were the speakers of the evening.

## Government Will Sell Steel

WASHINGTON, Jan. 31.—The Emergency Fleet Corporation will receive bids up to Feb. 8 on a tonnage of plates, shapes and bars at the Duval Corporation Shipyard, South Jacksonville, Fla., most of which is said to be in good condition. It includes 6136 tons of unpunched plates ranging from 3/16 in. to 1-in. in thickness; 635 tons of Scotch boiler plates, 117 tons of diamond floor plates, 2790 tons of fabricated material, of which 80 per cent are built-up members; 788 tons of plain angles and 211 tons of miscellaneous material, principally steel bars of different shapes and ranging from 1 in. to 3 in. in diameter.



# Sulphur Obtained from Blast Furnace Slag

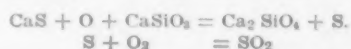
The Diehl Process and Apparatus Developed in Germany—  
Yields from Slags from Steel-Making,  
Foundry and Bessemer Irons

THE obtaining of sulphur from blast furnace slag is discussed by Prof. L. H. Diehl of Oberhausen, Germany, in an instructive article in a recent issue of *Stahl und Eisen*. Several paragraphs are devoted to the importance of sulphur in modern industrial life, and to the fact that before the war about 1,000,000 tons of pyrites, 250,000 tons blende and 30,000 tons sulphur were imported into Germany each year. During the war every effort was made to increase the output of German deposits of pyrites and zinc blende, and efforts were made to obtain sulphur from the large beds of gypsum and anhydrite (natural anhydrous calcium sulphate). Unfortunately efforts in these directions have not been entirely successful and there is today a scarcity of sulphur in Germany.

It was therefore desirable to investigate every available source of sulphur, which led the author to work on blast furnace slag. Even if its sulphur content is small the total amount is very large. The slag production in Germany before the war was approximately 20,000,000 tons, with sulphur running from 1 to 2.25 per cent and averaging 1.50 per cent. This represents

at least 300,000 tons of sulphur thrown away each year. Because of this large available supply, efforts were made to develop it and the method worked out protected by a war patent.

The Diehl process consists in obtaining sulphuric acid by oxidation of the calcium sulphide in blast furnace slag by means of air or by sulphates such as gypsum or anhydrite, with the help of air. The chemical reactions are very simple. The calcium sulphide unites with oxygen and gives lime which changes to ortho-silicate, and at the same time free sulphur is liberated. With sufficient excess of air this is burned and, if not, it passes off unburned with the gases.

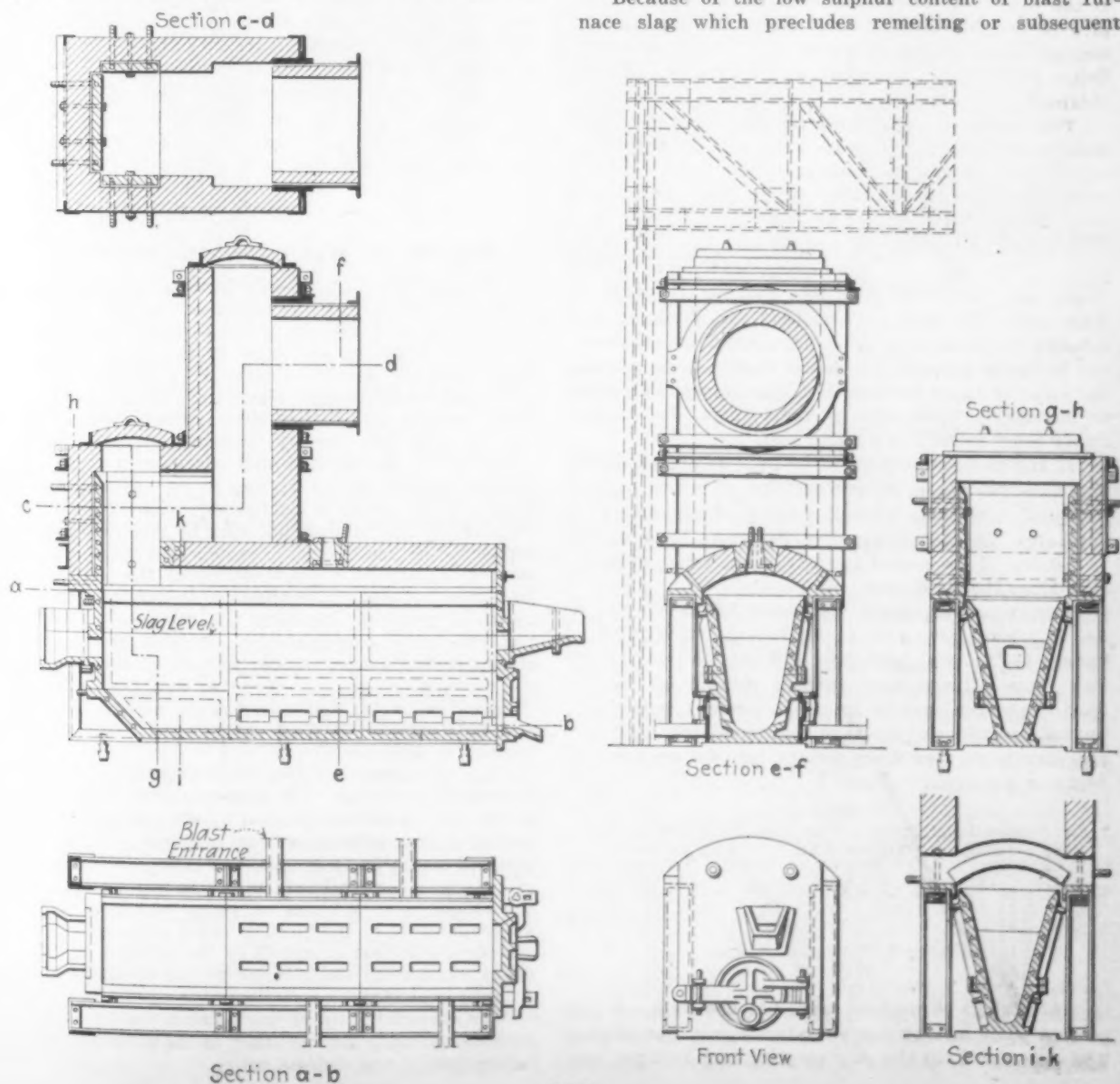


The reaction when calcium sulphate is present is as follows:



It should be mentioned that calcium sulphide and sulphate cannot exist together in a molten silicate slag, as is the case in the solid condition.

Because of the low sulphur content of blast furnace slag which precludes remelting or subsequent



treatment, all the work was done on the molten slag as it came from the furnace by blowing air through it. Preliminary tests carried out with molten slag and oxygen gave a gas containing 23.1 per cent  $\text{SO}_2$  by volume. Further experiments showed that a slot-shaped tuyere gave a richer gas than a round one. Following these tests an apparatus was designed that has been used successfully for several months at Gutehoffnungshütte. Its construction is shown in the illustration, which gives sectional and front views. The body consists of a gray iron casting with pipes for water cooling in the casting. In the bottom at each side are openings in which tuyeres can be placed. According to the kind of cast iron plates placed in these openings two, three or four slots can be used, one over the other. Blast boxes are arranged along the sides. When the apparatus is warm and the slag hot and fluid, the pressure uses from about 2 to  $3\frac{1}{2}$  lb. per sq. in. and often it rises to about  $4\frac{1}{2}$  lb. if the slag is colder, due to the formation of a spongy solid slag above the tuyeres.

At the end of a run of slag, the tapping hole is opened and the slag drained off. Then the working door is opened and the crusts and scales around the tuyeres broken and removed. The slag coating on the apparatus itself is allowed to remain unless it breaks off automatically, as it protects the metal against sudden changes of temperature, and also serves as an insulator for the slag, preventing unnecessary cooling.

In regard to the action of the different slags the following may be said: The sulphur output is higher as the slag is hotter and higher in sulphur. Acid slags give off sulphur more easily and more thoroughly than strongly basic slags. However, the latter are usually hotter and higher in sulphur, so that good results are obtained.

The change in appearance of the slags after treatment is interesting. It is known that slags with large amounts of calcium sulphide are milky because of numerous needles of sulphide. Such slags after treatment become completely clear and glassy, a proof that the sulphide is decomposed and the lime dissolved in the body of the slag. In some cases, with high sulphur slags and insufficient air, free sulphur is produced. This cannot be used as a method for obtaining free sulphur, but it explains the tremendous flame seen when air is blown through hot liquid slag rich in sulphur, the sulphur vapor burning in a long flame. This flame is intensively white with a violet tinge, due to lime vapor being present as a white mist.

If the gases produced in the process are conducted through iron pipes, an incrustation of white salts is produced, consisting almost entirely of potassium bisulphate. The temperature of the gases is about 930 to 950 deg. C., measured away from the range of radiation from the fluid slag.

The apparatus shown, measuring 3.5 meters (11 ft. 5 $\frac{1}{2}$  in.) long, 0.6 meter (1 ft. 11 $\frac{1}{2}$  in. wide) and 1.4 meters (4 ft. 7 in.) high, was sufficient to treat all the slag from a large blast furnace making 180 to 240 tons of pig iron each 24 hr. It is compact, and stands up well in practice. Average results obtained over several months on slag when making iron for open-hearth furnaces are given in Table I.

Air Treated Blast Furnace Slag from Steel-Making Iron		
Original Slag, Sulphur, Per Cent	Treated Slag, Sulphur, Per Cent	Sulphur Removal, Sulphur, Per Cent
2.35	0.97	1.38
2.21	1.15	1.06
2.35	1.34	1.01
2.44	1.26	1.18
2.44	1.19	1.25
2.45	1.20	1.25
2.40	1.15	1.25

These slags throughout were hot and fluid. A test on slag while making low phosphorus gray iron showed 2.26 per cent S. in the slag entering and 1.03 per cent

S. in the slag leaving the apparatus. The gas gave 10.37 per cent  $\text{SO}_2$ , 1.2 per cent  $\text{CO}_2$ , 3.8 per cent O, and 84.63 per cent  $\text{N}_2$ , all by volume.

Table II gives the results on basic Bessemer slags both with and without the addition of anhydrite,  $\text{CaSO}_4$ . These tests ran for over a month. The oxygen content of the gases was in all cases sufficient for the change of the  $\text{SO}_2$  to  $\text{SO}_3$  whether the chamber or contact process was employed. The percentage varied from 9.5 to 10.5 per cent by volume.

Composition of the Obtained Gases, showing Percentage of $\text{SO}_2$			
Without Addition of $\text{CaSO}_4$	With Addition of $\text{CaSO}_4$	Without Addition of $\text{CaSO}_4$	With Addition of $\text{CaSO}_4$
5.70	7.27	3.60	8.46
4.93	6.34	8.19	10.34
5.11	5.63	5.77	7.76
4.50	7.57	6.11	7.66
5.63	10.85	6.51	6.37
8.09	9.95	7.10	7.17
7.58	6.81	8.39	6.37
5.03	8.19	8.96	6.86
6.20	7.78	9.85	6.97
5.92	8.88	5.57	14.11

The gases obtained by the Diehl process contain on the average 6 to 7 per cent  $\text{SO}_2$ , small amounts of  $\text{CO}$ , from 1 to 1.2 per cent, and about 10 per cent oxygen, while the rest is nitrogen. There is entire freedom from arsenic, chlorine, fluorine, carbon monoxide, sulphur and dust or similar impurities, except for small amounts of potassium bisulphate which can be easily removed. The gas is therefore remarkably suitable for the production of specially pure sulphur products such as liquid sulphur dioxide, sulphites such as sodium sulphite or sodium bisulphite, sulphuric acid or fuming sulphuric acid. A very rich gas can be obtained if a sulphate such as calcium sulphate is added to the slag while air is blown in. In this way the heat of the slag is used for decomposition. After treatment the slag can be used exactly as before and for granulating, slag wool, building purposes, etc., it is better because of the lower sulphur content.—G. B. W.

### Report on Waterways Improvements

WASHINGTON, Jan. 30.—Of particular importance to iron and steel shippers is the report of the joint commission which studied the proposed improvement of the St. Louis River as an outlet of the Middle Western States and the Atlantic Coast. In a statement issued yesterday Congressman Nelson of Wisconsin stated that the analysis of testimony showed sentiment in Canada and this country favoring the proposed improvements. He insisted that the inquiry showed the need of opening this waterway to the resources of the Middle West, which is particularly rich in raw materials of the basic industries, such as iron ore, coal and copper. The commission reported that "no consideration of the economic practicability of the proposed St. Lawrence waterway can afford to ignore the important group of problems involving the relationship between rail and water transportation. In this group are included such questions as car and locomotive shortage, the terminal congestion, terminal and trans-shipment charges, rail rates and water rates, marine insurance and refrigeration." The expenditures recommended amount to \$252,000,000.

The commission believes that while it is physically practicable to bring both railroads and terminals up to the point where they could handle the traffic of the United States without serious congestion, the expense involved would be enormous, amounting in the opinion of experienced railroad executives, to two billion dollars per annum over a series of years, and it is perhaps questionable if in the end the relief afforded would be comparable to that promised by the creation of an all-water route from the interior of the continent to the Atlantic seaboard.

The commission is of the opinion that it would be desirable to make further study of the alternative plans before taking any definite action.



# Silico-Thermy and Its Practical Application

## German Iron-Silicon Castings of "Thermisilid" Made by Thermal Reactions—The Silicides Which Are Formed—Properties of the New Alloy

BY C. A. HEISE

AT a meeting held by the German Metallurgical Society, several months ago, Richard Walter, Düsseldorf, read a paper on a novel process of producing silicon alloys of a pre-determinable chemical constitution developed by the author. A synopsis of the paper follows:

Positive heat changes, due to reactions, are a feature of the smelting of iron and silicon which has not been subjected to detailed scientific research thus far, though they have been observed by other scientists devoted to the study of this particular field. The only possible explanation of these heat changes must be sought in the formation of silicides. If soft iron and silicon are simultaneously heated in a crucible, a spontaneous heat reaction will set in at about 1200 deg.

by the enormous heat as, for instance, cement or calcium carbide. Such is the heat generated by the formation of ferrosilicides that 80 per cent of the iron of the Fe<sub>2</sub>Si silicide and 67 per cent of that of the FeSi silicide are not only liquefied but even considerably superheated.

When it is considered that the liquefaction is solely due to the liberated heat of the reaction, it is obvious that the melting process, aside from its interesting thermo chemical features, has also economic bearings which are worth studying. A certain analogy with aluminothermy—which, if silicon is used as a reducing agent, may be classed under silico-thermy—is apparent, a common feature of both being chemical transformation and positive heat changes with the differ-

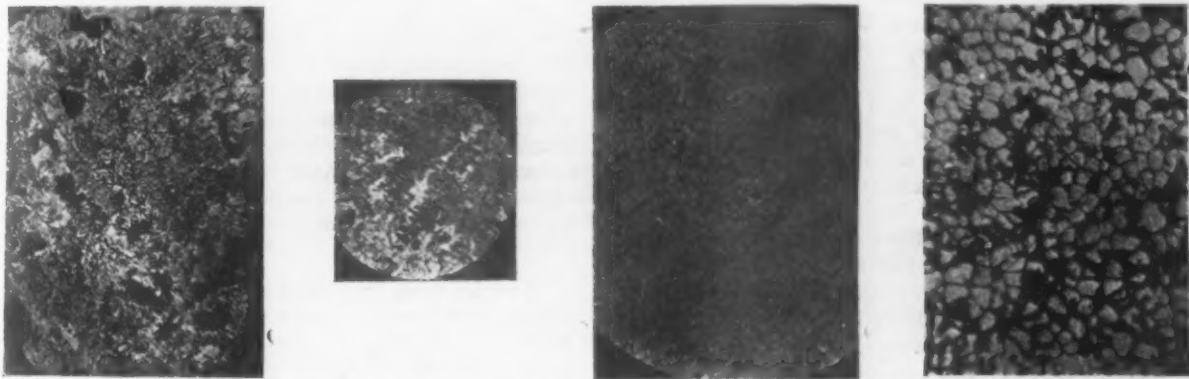


Fig. 1 (Left) Is a Photomicrograph of a Silicon-Iron Alloy Formerly Produced in a German Foundry, While the Small Photomicrograph, Fig. 2, Represents the Structure of Tantalum. The third photomicrograph, Fig. 3, is one of Ironac, and Fig. 4 (right) is a reproduction of the structure of the new iron-silicon alloy, Thermisilid

Celsius or considerably below the melting points of the two components, which will liquefy the charge within a few seconds, leaving behind a highly superheated metal.

### The Silicides Formed

The silicides thus formed are either FeSi or Fe<sub>2</sub>Si or their more or less saturated solutions in iron, according to the stoichiometric proportion of the quantities of the two components. The silicide, Fe<sub>2</sub>Si, for instance, is obtained by proportioning the solid charge in a ratio of 80 per cent iron and 20 per cent silicon. The temperature of the bath immediately upon termination of the reaction was ascertained by test observations to be 1800 deg. Celsius and above. Both micrographic and chemical analyses confirm the fact that the molten metal crystallizes as a homogeneous body. An exact chemical transformation is thus taking place and it is interesting to note that the components react in a solid state already several hundred degrees below their melting points under simultaneous liquefaction. Owing to the swiftness of the reaction, a precise measuring of the temperatures is difficult and largely restricted to the measuring of the temperature at the termination of the reaction by an optical pyrometer when, however, a notable drop in temperature has doubtless already taken place.

An empirical method of obtaining some temperature data consists in adding such bodies to the charge which, while not participating in the reaction, are yet liquefied

ence, however, that a reduction is taking place in the aluminothermic process.

### Silicides of Other Metals

Similar heat changes have been observed in the formation of silicides of other metals of the iron groups, such as manganese, nickel and cobalt, as well as with the metals of the chromium groups, chromium, tungsten and molybdenum.

The carbon content of the silicides plays a decisive rôle in the silico-thermic reaction, the exothermic process being hindered by carbon and, with certain percentages of carbon, no heat changes being noticed at all. The most violent reaction is observed with non-carboniferous iron, especially electrolytic iron, but the intensity of reaction decreases with an increasing carbon content. With cast iron no visible heat changes were noticeable at all, the silicon being mechanically separated from the iron under a simultaneous elimination of elementary carbon. Another result of the high temperature incident to silico-thermic reaction is the formation of a further carbon combination, silicon carbide (SiC<sub>2</sub>).

### Silicon Alloys in Industry

Silicon alloys are of importance to the chemical and associated industries on account of their resistance to acids and other aggressive matter. One of the oldest representatives of the silicon alloys is the

so-called neutral iron, (7 to 8 per cent Si). Some 15 years ago, British foundrymen began to increase the silicon percentage up to about 15 to 17 per cent, the new alloy being marketed under the name of Tantiron.

Fig. 1 is a photomicrograph of the structure of an alloy formerly produced at a German foundry. The honeycombed surface, the result of a separation of graphite when cooling down, illustrates better than any text the unserviceableness of the alloy for products required in the chemical industry. The instability of the structure of the Tantiron, shown in Fig. 2, is clearly revealed. The darker parts represent a carboniferous iron-silicon solution with an average Si content of 15 to 17 per cent, the lighter spots sprinkled in between are iron silicide,  $\text{FeSi}$ , of 33 per cent Si. The simultaneous occurrence of the two bodies having different silicon contents is, of course, bound to cause instability. Fig. 3 shows the American metal Ironac, characterized by the dendritic constitution of crystals. This material is known for its extraordinary hardness but is hardly suitable for castings.

#### Unstableness Due to Different Silicides

It is mainly due to this unstable character that these alloys have on the whole met with little favor in the chemical industry. Castings made of such alloys will easily develop cracks, the casting stresses being partly due to the tendency of the structure to change over into a state of balance, but even more so to the difference in contraction of the various silicides. The primary aim of the author, therefore, was to avoid an agglomeration of bodies of different constitutions, in other words: To produce a metal composed of one uniform silicide only. Such an alloy would consist of a chemically uniform body and therefore be in a state of balance.

Now, the ordinary melting methods heretofore followed were mainly in the nature of physical processes, though occasionally accompanied by synthetic formations of silicides. The only reliable way of effecting a chemical combination, however, is by way of reaction or transformation. Such a transformation is taking place in silico-thermic reactions. The photomicrograph of an alloy produced by this process is shown in Fig. 4. The arrangement of the polygonal crystals distinctly reveals a lawful orientation, the bright spots being the silicide,  $\text{FeSi}$ , while the darker mass represents a carboniferous solution of silicon in iron. The photomicrograph furthermore characterizes the homogenous and equalized alloy which is free of interior stresses.

This metal lends itself to castings the production of which has met with insurmountable difficulties so far

and is claimed to answer requirements by the chemical industry in a far higher degree than all its predecessors. In order to obtain satisfactory results, several other factors have to be considered in the practical application of the process which are primarily calculated to control the behavior of the carbon. Further details in this respect were not disclosed by the author on the plea of safeguarding the interests of the German industry. The alloy produced in this novel process has been given the name "Thermisilid" by the inventor and is being produced by the Friedrich Krupp Aktien Gesellschaft and the Esslingen Engineering Works. A range of samples of thermisilid products is shown in Fig. 5.

#### An Inexpensive Process

The silico-thermic reaction, which has been shown to be a simple and cheap melting process, may also be advantageously applied in other fields of metallurgy, particularly where a certain silicon content is required in the product, as is the case with dynamo and motor sheets. Another possibility of applying the process is the production of solid reactionary bodies consisting of ferrosilicon and small iron scrap which are formed into briquettes with cement as a bond. These briquettes will liquefy immediately upon reaching the temperature of reaction and will be serviceable wherever silicon is to be added to the charge, as for instance in foundries.

In conclusion it may be mentioned that while the thermisilid is highly acid-proof, it does not enter into corrosion where a rust-proof material is required. Regrading the workability of thermisilid, machining operations are still confined to grinding on account of the hardness of the alloy. It is hoped to improve upon this drawback so as to render "chip producing" machining operations possible. The strength of thermisilid is below that of cast iron.

The Millville Iron Works, Inc., Millville, N. J., has begun operations in its new plant. It will manufacture tanks and stacks, structural iron work mainly for bridge purposes, also repair boilers and do oxy-acetylene cutting and welding. The company has completed its purchases of equipment. Samuel Campbell is president; Daniel Campbell, vice-president, and Lester Fleetwood, secretary-treasurer.

W. B. Storey, president the Atchison, Topeka & Santa Fe Railroad, has announced that an extension 58 miles long will be built in Kansas to tap a rich wheat growing district in Stanton and Grant counties. This is the largest new construction project to be undertaken by a railroad since the pre-war period.



Fig. 5—Various Castings Which Have Been Made of the New German Iron-Silicon Alloy, "Thermisilid." Produced by the Heat of the Chemical Reaction



## February Meeting of the Mining Engineers

The 125th meeting of the American Institute of Mining and Metallurgical Engineers will be held at the Engineering Societies Building, New York, Feb. 20 to 23. The program for the two sessions on iron and steel on Wednesday, Feb. 22, follows:

10 a.m.—Room 1.

"Application in Rolling of Effects of Carbon, Phosphorus and Manganese on Mechanical Properties of Steel," by W. R. Webster.

"Acid Open-hearth Process for Manufacture of Gun Steels and Fine Steels," by W. P. Barba and Henry M. Howe.

"Effect of Sulphur and Oxides in Ordnance Steels," by W. J. Priestley.

"Electrolytic Deposition of Iron as Applied to Building Up Worn or Undersized Parts," by D. R. Kellogg.

2 p.m.—Room 2.

"Effect of Time in Reheating Quenched Medium-carbon steel Below the Critical Range," by C. R. Hayward, D. M. MacNeil and R. L. Presbrey.

"Effect of Quality of Steel on Case-carburizing Results," by H. W. McQuaid and E. W. Ehn.

"Malleabilizing White Cast Iron," by Arthur Phillips and E. S. Davenport.

The first of these sessions is in memory of Prof. J. W. Richards.

On Monday morning, Feb. 20, there will be a meeting of the committee on breakage and heat treatment of drill steel at which B. F. Tillson will preside. The regular smoker will be held in the evening.

Two sessions of the Institute of Metals Division are scheduled, one for Monday afternoon, Feb. 20, and one for Tuesday afternoon, Feb. 21. Symposiums on oil, gas, mining and on industrial relations fill the programs for other sessions.

The annual banquet will be held at the Hotel Pennsylvania on Wednesday evening, Feb. 22.

Several excursions are planned for Thursday, Feb. 23. The Crucible Steel Co. of America's plant at Harrison, N. J.; the Bayway plant of the Standard Oil Co. of New Jersey and the chrome plant of the U. S. Metals Refining Co. are to be selected from by those interested.

## Drop Forge Association Activities

The recent organization of the American Drop Forging Institute, to serve the interests of drop forging makers in extending the field of use of such forgings, has apparently resulted in the suspension of the American Drop Forge Association. The latter association was made up of the heads of the drop forging departments of the various manufacturing plants like automobile plants, and also of the commercial and technical executives of the independent drop forging companies.

There is now a plan for the new association to carry on the practical matters formerly handled by the American Drop Forge Association. Four or five groups of the technical and shop men will be formed to meet at intervals to discuss shop practice and annually to review activities. It is the expectation that the institute, combining all the subjects of interest to the industry, will cover a wide field and be more useful and valuable than was the association. A uniform cost system is actively being studied under the supervision of the Cleveland office of Scovell, Wellington & Co., in the Hanna Building, that city.

## Buffalo Engineering Society in New Quarters

The Engineering Society of Buffalo, with a membership of 600, now has permanent quarters in the Iroquois Hotel, Buffalo. These quarters are fitted up as a club and have, after two months, resulted in a marked increase in interest in the activities of the society.

At the January meeting of the Society, Jan. 10, there were two speakers. E. B. Neil, Pierce Arrow company, spoke on "Progress in Worm Gear Designing." Capt. George H. Norton, representing the city planning commission of Buffalo, outlined the activities of the commission.

On Jan. 24 the first of a series of luncheon meetings

was held. Arthur C. Pound, under the subject "Men, Mills and Minds," covered the psychological effect of automatic machinery on industrial workers.

The regular monthly meeting, Feb. 14, will be addressed by Ralph H. McKee, Ph.D., professor of chemical engineering, Columbia University, on the subject of "Gasoline from Oil Shale."

## Steel Manufacturers Join Standards Committee

Beginning with 1922, the American Railway Association (Engineering Division) and the Association of American Steel Manufacturers became member-bodies of the American Engineering Standards Committee.

The Association of American Steel Manufacturers is an organization of forty iron and steel manufacturing companies. Its activities are limited to the standardization of rolling mill practices and to the standardization and inspection of iron and steel products. The association was organized in 1895. Its official representative on the American Engineering Standards Committee has not yet been designated.

The American Railway Association, which speaks for practically all the steam railroads of the country, has four technical branches, each having its own secretary, the engineering and the mechanical divisions, and the signal and the telephone and telegraph sections. The engineering division, which is intimately connected with the American Railway Engineering Association, the two organizations having the same officers, covers broadly the civil engineering activities of the railways.

These two new member-bodies bring the total number of national organizations represented upon the American Engineering Standards Committee up to 28, and of representatives to 52.

Estimates of the extent to which the 1919 coal strike in the bituminous field affected output, now made by the United States Geological Survey, are of interest in view of the approaching "show down" on miners' wages, scheduled for March 31. Of the total capacity, 71.6 per cent was involved in the 1919 strike.

## COMING MEETINGS

### February

**American Boiler Manufacturers' Association.** Feb. 13. One-day winter meeting. Fort Pitt Hotel, Pittsburgh. Secretary, H. N. Covell, 191 Dikeman Street, Brooklyn, N. Y.

**American Institute of Mining and Metallurgical Engineers.** Feb. 20-25. Spring meeting, Engineering Societies Building, New York. Secretary, Frederick F. Sharpless, 29 West Thirty-ninth Street, New York.

**American Association of Engineers.** Feb. 22. Congress Hotel, Chicago. Secretary, C. E. Drayer, 63 West Adams Street, Chicago.

### March

**American Society for Steel Treating.** March 3. Sectional meeting, Engineering Societies Building, New York. Secretary, W. H. Eisenman, 4600 Prospect Avenue, Cleveland.

**Refractories Manufacturers' Association.** March 15, 16 and 17. Annual meeting, Chicago. Secretary, F. W. Donahoe.

### April

**National Metal Trades Association.** April 19 and 20. Annual meeting, Hotel Astor, New York. Secretary, Louis W. Fischer, Peoples Gas Building, Chicago.

**American Supply and Machinery Manufacturers' Association and Southern Supply & Machinery Dealers' Association.** Joint Meeting, April 24 to 26, Birmingham. F. D. Mitchell, 232 Broadway, New York, is secretary of the American association and A. M. Smith, Smith-Courtney Co., Richmond, Va., is secretary of the Southern association.

**Society of Industrial Engineers.** April 26 to 28. Spring meeting, Hotel Statler, Detroit. George C. Dent, business manager, 327 S. La Salle Street, Chicago.

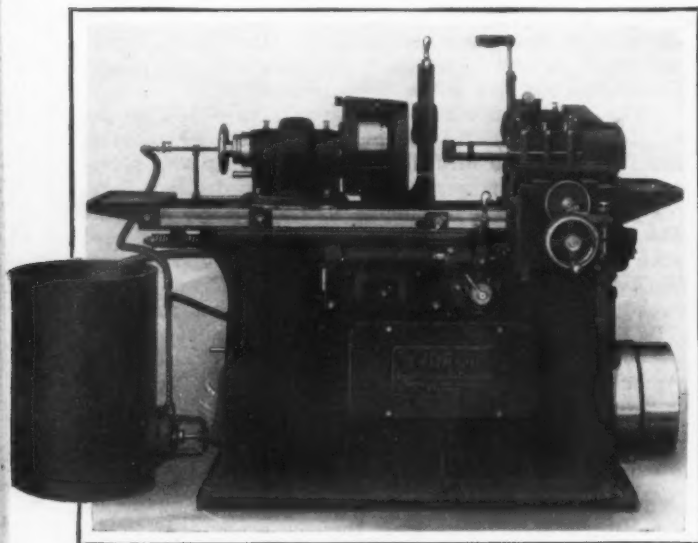
**American Electrochemical Society.** April 27 to 29. Spring meeting, Baltimore. Acting secretary, Dr. Collin G. Fink, 110 Park Avenue, New York.

### Internal Grinder for Production Work

An internal grinding machine known as the Hydrol, designed primarily for production work and based upon the principle of high traverse speeds, has been placed on market by the Greenfield Tap & Die Corporation, Greenfield, Mass.

The superiority of the machine, it is claimed, is in its ability to remove stock rapidly in roughing operations, for holes of 3 in. bore diameter or greater. It is said to remove at least one cubic inch of hardened steel per minute, floor to floor, assuming a reasonably fast holding fixture. Where exceptional finish is desired, production rates are sacrificed to some extent, although the high operating speeds are said to show to advantage in this class of work as compared with conventional machines of the slower type.

The machine is shown in the accompanying illustration. The wheel spindle is carried on a wheel slide



The Design Is Based on the Principle of High Traverse Speeds. Flexibility of table control is a feature

controlled by a feed screw calibrated for feed increments of 1/4000 in. on the bore diameter of the work. The work table reciprocates upon ways at right angles to the wheel-slide ways and carries a work head for holding and rotating the work piece.

The table traverse speed is controlled by the regulation of a sensitive throttle valve which admits oil under low pressure to a distributing valve, controlled by the table-limit stops, and thence into either end of a double-acting cylinder and piston mechanism attached to a crosshead on the under side of the table. It is claimed that by a careful application of hydraulic principles a flexibility of table control has been obtained which is practically impossible to get by mechanical means. Table speeds from 2 to 36 ft. per min. are employed in the usual range of operation, while maximum speeds of 50 ft. per min. are possible in the present design. Special designs can provide for faster operation.

There are no definite stations of speed setting and minute shading of speed is possible. Valve and piston design provides for shockless reversal. The time to accomplish a reversal is said to be so small that on 1/2-in. stroke the table will reverse 320 times per min. without shock. A pressure relief valve is provided to stop the table when overloaded, this feature also permitting accurate positioning of the table for grinding against a shoulder. A screw-adjusted stop locates the table, which is held in place under oil pressure. By a combined use of reversing and locating stops, the table can be held to within 0.0005 in. limit on reversal, without sacrifice in operating speed.

The work is revolved toward the operator at the top, while the wheel turns away from the operator at the top. The diamond contacts on the back of the wheel throw the dust down instead of up. Spindle bearing pressures are in the same direction whether the wheel is grinding or running free, a feature intended

to eliminate "hunting" in the bearings and overcome one source of bell-mouth grinding. Ball bearings are employed throughout and the standard spindles provided are mounted upon ball bearings installed so that the thrust adjustment eliminates shake in either axial or radial pressure action. A good commercial finish free from chatter is said to be obtainable with the standard spindles. Where exceptional mirror finish is desired special types of spindles are used.

For large bearing races having straight holes a special type of work head is provided which chucks several races end to end, holding them endwise between a plunger operated by oil pressure and an iris plate mechanism fashioned after a camera shutter. The plunger ejects the load at the end of the operation, when the iris is opened. By the use of loading pots this fixture also grinds piston rings, etc. Machines thus equipped are said to be consistently showing floor to floor time of from half to one-third that of the conventional machine commonly used for this work. A single machine, it is claimed, has ground 25,000 piston rings per 10 hr. day with a helper to load the pots.

The following are among the features emphasized by the makers as underlying the high production of this machine: High table traverse allows the rapid exposure of work surface to the wheel face for depths of wheel feed well within the capacity of standard abrasive wheels. The wheel, therefore, actually cuts more material in a given time without friction and heat losses attendant upon slow traverse operation. Rapid sizing is obtained because the rapid application of relatively light cuts minimizes spring away or gouging action of the wheel and draws out the surface uniformly. A single lever controls all table motions. A foot pedal stops and starts the work. Heavy construction minimizes distortion and vibration, and allows accurate positioning in spindle feeding. The feed index mechanism is located by "feel" as well as by sight, permitting the operator to watch his work. The diamond-holder fixture swings out of the way, but can be located instantly at the previous position on the table by a single motion. A water supply is provided for cooling the diamond. Spindles are of the unit type and are exchanged as fast as a man can slide one out and put in another.

The machine is the design of R. L. Morgan, formerly principal owner of Churchill-Morgan-Crittlinger, Worcester, which concern was purchased recently by the Greenfield Tap and Die Corporation and forms a part of the machine tool division with which Mr. Morgan is connected. W. H. Chapman, formerly assistant to C. H. Norton, Norton Co., Worcester, is assisting Mr. Morgan in giving engineering service.

David J. Joseph was re-elected president of the David J. Joseph Co., waste material dealers, at the annual meeting held in Cincinnati Jan. 21. All of the other officers of the company were re-elected. Reports submitted at the meeting showed that the company had had a fair year and that the prospects were much brighter. The company during the year had branched out to a considerable extent, opening offices in Pittsburgh and yards at Chicago and St. Louis. A feature of the meeting was the presentation of a silver loving cup to Mr. Joseph from the officers and employees of the various offices of the company.

The Polytechnic Institute, 99 Livingston Street, Brooklyn, has inaugurated an evening course in metallography. Instruction is given by lectures and laboratory practice in a well-equipped metallographic laboratory. The course covers a study of the micro-structure of iron and steel and the fundamental physical chemical principles. The course consists of 15 lectures given on Friday evenings at 6.30 and 15 2-hr. laboratory exercises on Friday or Monday evenings from 7.30 to 9.30 commencing Feb. 3. The class is limited to 30 and the fee is \$25.

The Chapman Valve Mfg. Co., Indian Orchard, Mass., announces the completion of its new steel foundry, electrically operated throughout. The plant is 275 x 90 ft., the height to the crane rail being 22 ft.

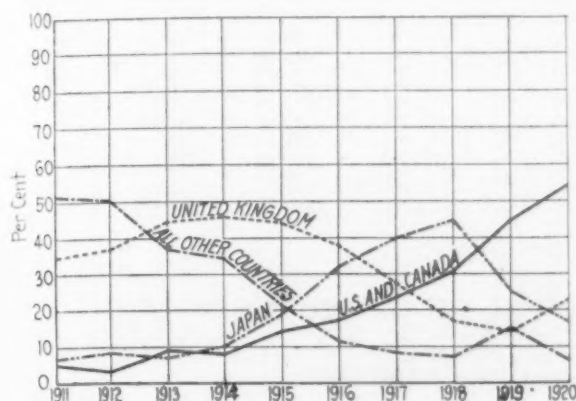


## CHINESE MACHINERY TRADE

## Recent Changes in Commerce Between That Country and the United States

BY W. H. RASTALL\*

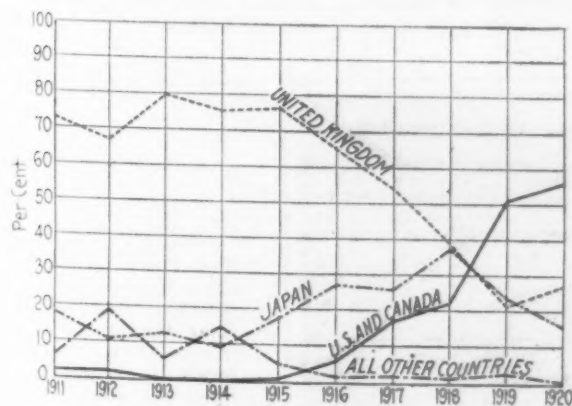
THE progress made by American machinery manufacturers in developing export business and the superior position of American engineering equipment in the markets of the world are shown very plainly by the experience in China since 1911, as is illustrated very forcibly by the charts published herewith. It should be noted that these data are from Chinese,



Division of Imports of Industrial Machinery into China,  
According to Countries of Origin

not American sources, being developed from the returns of the Chinese Maritime Customs.

Conditions in China have differed radically from those in the other markets of the world because business there has been influenced very strongly by political forces, as has been called to public notice in connection with the armament conference. It has been customary to specify in loan agreements that the machinery required shall be purchased in the country furnishing the money, with the result that the United States supplied China only about 30 per cent of the machinery she imported in 1918, as compared with 80 per cent supplied in the same year to Japan, which is and has long been an openly competitive market. Consequently it should be recognized that the progress indicated below has



Division of Imports of Textile Machinery into China,  
According to Countries of Origin

been made in spite of the difficulties encountered by those who sell machinery in China without financial assistance.

The customs authorities in China always credit consignments to the last port of shipment, so that machinery built in the United States and shipped to China via Vancouver would be credited as from Canada. In recent years very important amounts of machinery have been shipped in that way, and for this reason the

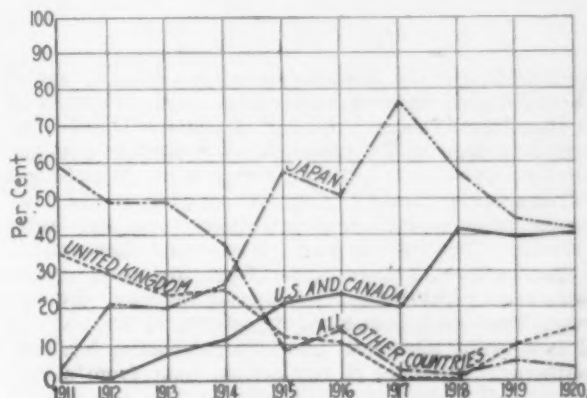
charts show the total of the shipments from the United States and Canada, as it is felt that practically all of the machinery leaving Canada originated south of the boundary. Similarly it should be remembered that the shipments from "other countries" include not only machinery from Germany but important shipments from Holland, Belgium, Sweden and other sources, although in the period prior to 1914 Germany was the most important of these sources of supply.

The progress made has been shown as a percentage in order to demonstrate clearly the comparative position of American exports in the China machinery trade, but this is a rather inadequate expression of the true situation, as there has also been a most astonishing increase in the volume of this business, making it worth while to submit the following figures showing the value of the shipments of the leading countries. These values are given in Haekwan taels, the exchange value of which fluctuates very seriously, being worth about 65c. in 1911, \$1.03 in 1917, etc.

Value in Haekwan Taels of Machinery Imports into China  
(Excluding agricultural, embroidering, knitting and sewing machinery)

Year	U.S.A. and Canada	United Kingdom	Japan	Total From All Sources
1911.....	382,054	2,330,209	465,122	6,561,020
1912.....	179,803	1,762,916	388,475	4,704,485
1913.....	673,227	3,241,590	548,522	7,137,048
1914.....	681,170	3,749,149	852,934	8,157,270
1915.....	659,722	1,994,518	851,185	4,485,867
1916.....	1,078,530	2,350,903	1,991,031	6,131,258
1917.....	1,411,141	1,648,869	2,419,813	5,982,715
1918.....	2,390,332	1,313,604	3,569,909	7,860,290
1919.....	6,407,727	2,073,968	3,604,905	14,328,249
1920.....	12,181,382	5,229,026	3,727,604	22,536,254

From this table and also Chart I it is evident that American machinery exports to China have increased



Division of Imports of Machine Tools into China,  
According to Countries of Origin

3100 per cent since 1911 and the American share of this business has increased from 5.8 per cent, the lowest of the countries here mentioned, in 1911 to 54.1 per cent, or more than all others combined, in 1920.

Even this statement does not adequately describe the situation, because American machinery trans-shipped in Japan, especially for points in North China and Manchuria, is credited to Japan in the above returns. Unfortunately, it is not possible to submit figures to show the volume of this trans-shipment business but there is reason to believe it is very large and during the war was strongly influenced by the demand in Siberia for war equipment.

The above refers to the experience covering all classes of machinery. If one wishes to be more specific, it is possible to submit corresponding charts regarding particular classes of machinery and in Chart II is a corresponding record of Chinese imports of textile machinery. In this diagram the line representing Japan is also deceptive, as a considerable amount of the textile machinery exported from Japan is of a type employed in cottage industries, as distinguished from the factory machinery shipped from Europe and America. For Americans the interesting part of the diagram is the comparison between the experience of the United States and the United Kingdom in this trade. The superiority of American engineering as represented by cotton mill design and cotton mill equipment has been clearly rec-

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ognized in China as also certain other countries, and it is anticipated that European designs will soon incorporate certain American features. The values involved in this trade are as follows:

Value in Hackwan Taels of Textile Machinery Imports into China

Year	U.S.A. and Canada	United Kingdom	Japan	Total From All Countries
1911.....	7,161	241,234	60,159	331,582
1912.....	9,885	307,283	50,229	458,616
1913.....	2,615	672,150	112,500	839,724
1914.....	2,530	1,540,100	187,661	2,038,460
1915.....	15,446	1,076,229	253,490	1,419,511
1916.....	115,431	1,257,961	531,437	1,934,141
1917.....	218,928	669,649	302,607	1,235,800
1918.....	379,867	669,402	642,948	1,714,994
1919.....	1,944,350	813,254	897,760	3,767,406
1920.....	3,897,204	1,925,696	1,071,201	6,927,728

It is thus clear that the textile industry in China is growing rapidly, and that the American interest in the trade is making even more rapid progress.

Correspondingly, Chart III illustrates the experience in connection with machine tools. This class of machinery is of a type that is strongly influenced by the loan and concession agreements, being used very largely in connection with railroads, mines, arsenals, dock-yards, etc., and it is this that explains, to a large ex-

tent, the situation in 1911 and 1912. Subsequent experience is largely self-explanatory, but the above remarks regarding the trans-shipment of machinery from Japan should be remembered. It is true that Japan is trying to develop a machinery building industry and has paid especial attention to the production of machine tools, having more than 26 shops engaged in this business in 1918. It should also be remembered that Chart III is plotted in percentages, so that the high value shown on the Japanese curve for 1917 is deceptive. In that year European and American manufacturers shipped very little of this class of machinery because of the war embargoes. The volume of this machine tool business is shown in the following table:

Value in Hackwan Taels of Machine Tool Imports into China

Year	U.S.A. and Canada	United Kingdom	Japan	Total From All Countries
1911.....	615	9,699	1,067	27,726
1912.....	133	5,726	4,112	19,629
1913.....	3,773	12,112	10,234	51,288
1914.....	11,001	24,040	25,771	96,912
1915.....	15,494	9,052	42,094	72,811
1916.....	23,403	10,772	49,740	97,778
1917.....	40,983	1,254	160,475	208,394
1918.....	145,547	2,598	198,954	349,108
1919.....	197,859	50,477	221,996	499,853
1920.....	305,780	111,038	316,636	761,072

## Gas Burning Equipment Installed on Large Core Oven

Details of Construction—Data on Performance  
—Temperature Regulation—  
Operating Cost

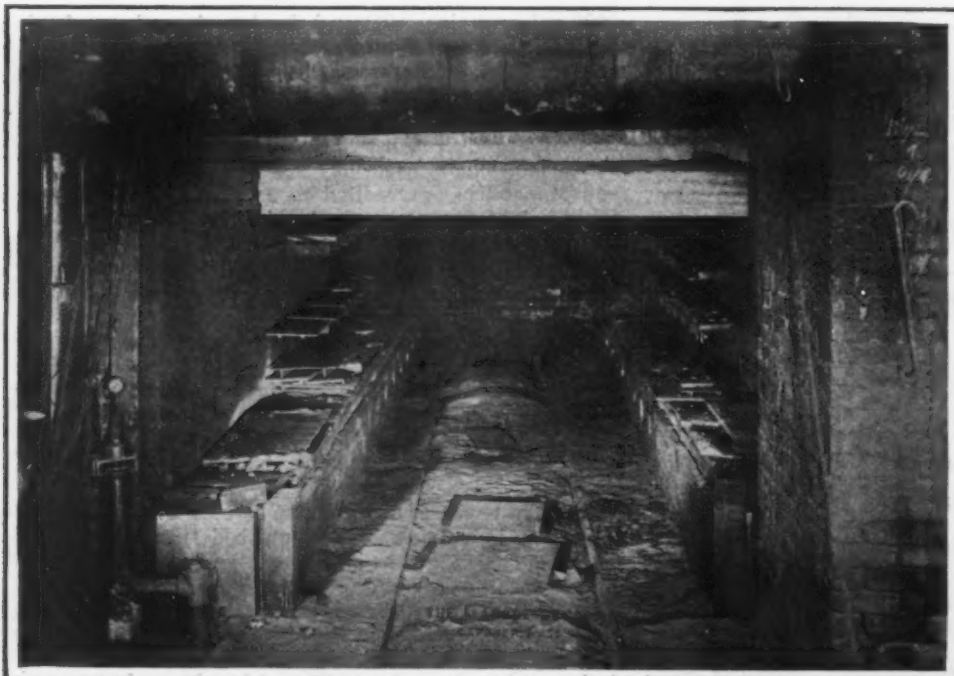
BY W. M. HEPBURN\*

A SUCCESSFUL installation of gas burning equipment was recently made on a large core oven of the Gardner General Foundry, Gardner, Mass. The apparatus used was furnished by the Surface Combustion Co., New York, and was designed to burn the gas with the proper amount of air for complete combustion, gas-air proportions being maintained constant automatically. The issuing products of combustion entrain as they enter the oven either fresh air, oven atmosphere or any desired combination of the two. By this means the gas is burned at its greatest efficiency, the dilution taking place only after the combustion has been completed. Products of combustion issue from a special type of burner at a high velocity, and this energy

is utilized to entrain the quantity of air required to maintain the desired oven atmosphere, at the same time transforming the small quantity of high temperature products to a larger quantity of comparatively low temperature drying gases.

The oven was of the coke-fired car type, constructed of red brick, and measured internally 9 ft. wide, 25 ft. long and 6 ft high. It accommodated three steel cars each having a loading space 8 ft. long by 5½ ft. wide upon which the large cores were loaded. The oven was formerly fired with coke and had two fire boxes, one at the left-hand rear corner on one side; the other at the right-hand front corner at the other side. One flue runs from the bottom of the oven and two from the top to a stack approximately 30 ft. high.

\*Engineering department, Surface Combustion Co.



Two Fire-Brick Ducts Extend Down Either Side, as Shown. A circular tile at the entrance of each duct forms a throat into which the burner fires. The approach to the throat has two openings, one leading into the oven and the other through the front to introduce fresh air.



In converting the oven the fire boxes were bricked up, and a special type of burner together with an inspirator supplying it were installed. These were placed at the front firebox, on either side of the car approximately 9 in. above the floor level, as indicated in the accompanying illustrations. Two fire-brick ducts 18 x 18 in. were built at the floor level and extended down either side, as shown, openings being provided at short intervals along the sides of each duct. These openings were placed at the sides in order to prevent sand from falling inside the duct and also to enable the top of the duct to be used as shelves for drying the smaller cores. A circular tile was placed at the entrance of each duct, forming a throat into which the burners fired.

cores, reveal a close relationship between cubic feet of gas used and pounds of cores baked, 1.04 of 550-B.t.u. gas per lb. of cores being a representative figure. This would tend to indicate that with a substantial red brick construction, the heat losses of the oven are small compared to the heat absorbed by the work treated. This in turn means that it is of prime importance to accurately control the atmosphere within the oven.

The advantages of this type of firing lie in the complete utilization of the inherent advantages of gas fuel. With this method the B.t.u. in the gas was utilized to generate heat energy, its velocity to condition the atmosphere, its distribution to maintain a rapid circulation. No other fuel contains so many inherent

Gas-Fired Core Oven—General Data for First Three Runs

Run No.	Temperature			Deg. Rise Per Hr.	Gas Rate Coming to Temp. Average Cu. Ft. Per Hr.	Hrs. Held at Temp.	Gas Rate Holding at Temp. Average Cu. Ft. Per Hr.	Total Amount Cores Baked, Lb.	Total Gas Used, Cu. Ft.	Cu. Ft. of Gas Per Lb. of Cores Baked	Approx. Rate of Change of Air
	From, Deg.	To, Deg.	Hours								
1	260	500	3	80	1,543	2	1,084	5,150	6,800	1.32	20
2	100	550	5½	82	2,040	5	657	11,256	14,500	1.29	21.6
3	100	450	2	100	2,040	3.5	980	7,200	7,500	1.04	19

The approach to the throat was located just inside the front wall or door and provided with two openings; one at the top leading directly into the oven through which the oven gases could be drawn to cause a recirculation; the other through the front of the oven through which fresh air could be drawn from the atmosphere. Dampers for each opening were provided so that the respective quantities of fresh air or oven atmosphere could be controlled as desired.

Burners of special design were lined with refractory capable of withstanding the highest temperatures and these in turn were connected to automatic inspirators

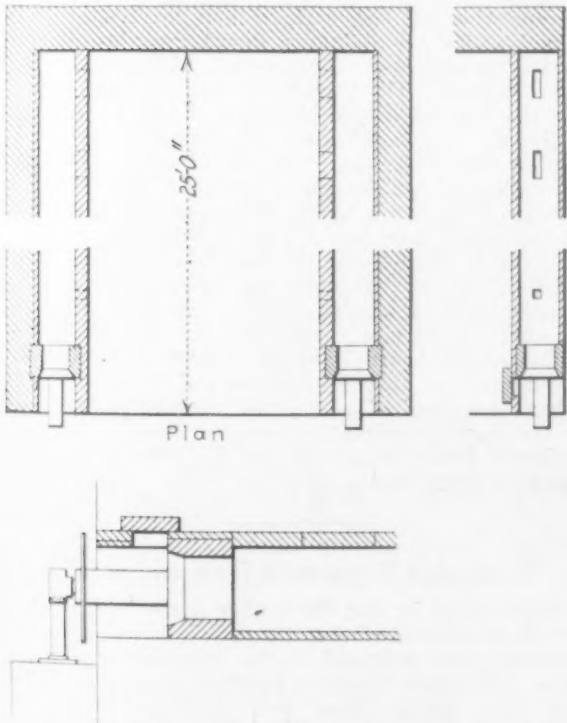
advantages regardless of the cost. The ability to utilize the core oven as a humidity dryer is of great importance, especially with larger size cores. In the ceramic industry the effects of skin drying are well known. Little attention has been paid to this phase in drying cores, however, although its effects are most serious.

Another advantage was found in the versatility of the oven under the close control of the temperature distribution. Temperature readings, taken at the front, center and rear of the oven, could be regulated to within 5 deg. at all three places. On the other hand it was sometimes necessary to bake an unusually large core together with a load of smaller cores. It was desirable in such cases to give the larger core extra heat and the temperatures were easily regulated to provide the additional heat at the particular location of the larger core, thereby enabling the uneven load to be uniformly baked.

The cost of a charge for this oven even in the simplest shape represents a value of \$75. Bad castings resulting from improperly baked cores run into losses which far exceed any possible difference in the fuel cost. The number of core ovens on high priced fuels already indicates that the progressive managers have found the fuel cost per hour a small percentage of the cost of baking cores.

The noteworthy features of this installation may be summarized as follows: Ability to maintain any desired atmosphere within the oven; uniformity of temperature; no regulation of the flues required; and the elimination of labor charges involved in firing, cleaning fires, regulating dampers and repairs. Ability to duplicate desired conditions is also a feature. After the best conditions are once determined these can be reproduced as frequently and easily as desired.

Positive control of the draft, eliminating the necessity of stack or stack drafts is also an advantage.



The Arrangement of the Burners and Ducts Is Shown in the Plan Above, Together with a Vertical Section, at the Right, of One of the Ducts. Below the plan, details of the burner connection are shown

which were designed so that gas under pressure up to 10 lb. per sq. in. drew in from the atmosphere the proper quantity of air for complete combustion. These proportions of air and gas remained constant through all rates of burning, and the rate of burning was controlled through a single valve.

The accompanying figures relate to typical runs made in this oven. Data obtained from a number of runs with charges weighing from 6800 to 14,500 lb. of

Details of Run No. 3

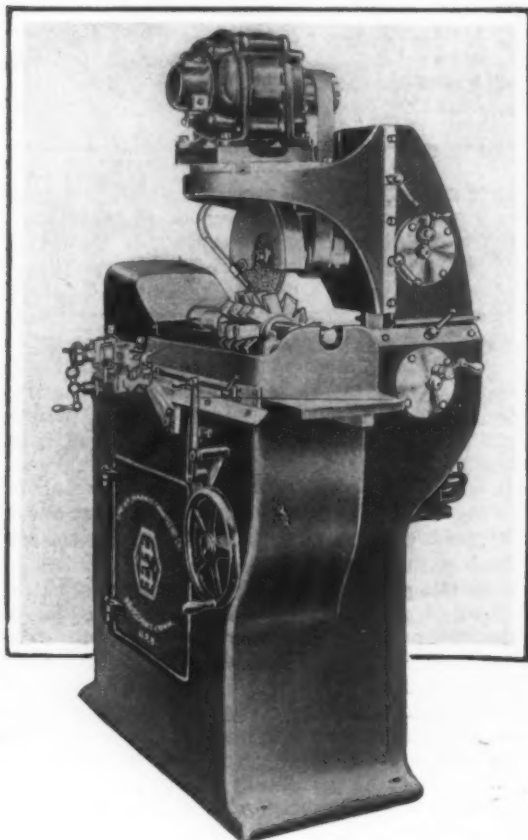
Gas Pressure, Lb.	Time, P.M.	Temperature, Deg. Fahr.		
		Rear	Center	Front
12	2:30	100	...	...
11	3:00	320	...	330
	3:30	380	...	280
11.5	4:00	...	440	415
	4:30	450	...	450
	5:00	420	...	430
	5:30	...	430	430
2½	6:00	...	450	445
	6:45	...	...	455
	7:00	...	...	460
	7:30	445	...	470
Shut down	8:00	445	480	480

Load: 9 large cores, 3 per truck, 3 small cores on floor near door.  
Weight of cores: 800 lb. each.  
Total weight: 7200 lb.  
Total gas used: 3990 measured at 13 lb.  
Corrected to 3 in. of H<sub>2</sub>O: 3990 × (14.7 + 13) ÷ (14.7 + 0.1) = 7500 cu. ft.  
Gas per lb. of cores baked: 7500 ÷ 7200 = 1.04 cu. ft., 550 B.t.u. gas.  
Gas per cu. ft. oven content: 7500 ÷ 1350 = 5.55 cu. ft.  
With gas at \$1.25 per 1000 cu. ft., cost per 100 lb. of cores baked: 7500 × 1.25 ÷ 7200 = \$1.31.

### Improved Motor-Driven Hob Grinder

An improved motor-driven, universal, full-automatic machine for sharpening hobs with right or left hand spiral flutes or straight flutes has been placed on the market by the H. E. Harris Engineering Co., Bridgeport. It will also grind formed cutters, Curvex cutters or ordinary gear cutters, either singly or in gangs.

In the new machine two motors are used, one a 1 hp. motor belted directly to the wheel spindle as shown in the illustration, and the other a  $\frac{1}{2}$  hp. motor mounted on a bracket at the back of the machine and integral with it. Carrying all the intermittent or reciprocating actions on a separate drive is intended to provide uniform and smooth action in the wheel drive, as none of the shocks from the various operating mechanisms are transmitted through the motor to the wheel spindle to



One Motor Drives the Wheel, As Shown. Another motor mounted on a bracket at rear drives the intermittent and reciprocating mechanisms

cause irregular action to the wheel. This arrangement is also said to result in less horsepower required and less current consumed.

The machine will index from 2 to 26 divisions and take hobs up to 8 in. in diameter and 10 in. long. The maximum angle of spiral possible at 8 in. diameter is 47 deg., either right or left. It grinds on both strokes of the table and indexes without stopping or dwell at the end of each return stroke. Indexing is by two plates, a working index plate and a master index plate, these being integral with each other and easily changed. Provision is made to adjust the front face of the teeth of the hob against the grinding wheel after all flutes have been ground. This is accomplished by rotating the hob toward the grinding face of the wheel, varying in amounts from 0.0002 in. to 0.005 in., as desired. This is done automatically and requires no attention when changing to a hob with a different number of gashes or flutes. The indexing is set in motion by a fixed trip dog on the machine frame operating directly on the index itself at the end of each return stroke, allowing the indexing mechanism to turn the index on the work spindle to the next index notch. No part of the table stroke is used to operate the indexing mechanism. The work-carrying or index head is rigidly built and excepting for the heaviest hobs, it is

not necessary to support the outer end of the work arbor with the tail center, a feature intended to save time in changing hobs.

The wheel is closely mounted to the overhead circular support, which is of large diameter and carried in a column of heavy construction. The support can be swiveled about the vertical center of the wheel for spiral hobs, and is graduated in degrees. The wheel spindle is carried in large bronze bearings having oil-well type lubrication and having provision for taking up thrust and wear. These replace the ball-bearings formerly used.

The machine is equipped completely for wet grinding, flooded lubrication of both the wheel and the work being provided. The machine may not only be set for radial grinding of the faces of hob teeth, but may be set also to compensate for the wear of the wheel. An adjustment is provided so that hobs may be ground undercut or with "hook" or "top rake" to the teeth. The work table is driven by a clutch reverse-gear mechanism operating a pinion in a rack, and stops on the front edge of the table permit adjustment to any length of hob within the capacity of the machine. All adjustments can be made conveniently by the operator from the front of the machine and many adjustments made while the machine is running.

Right or left hand spirals are generated without the use of change gears and may be adjusted to any lead angle by merely turning the ball crank handle at the left. This is done when the machine is either in motion or at rest. Graduations that give the lead angle in degrees and minutes are provided.

### Expect to Limit Expenditures for Repairs

WASHINGTON, Jan. 31.—Failure marked the attempt of Representative Graham of Illinois to have the House incorporate an amendment in the independent offices appropriation bill last week to limit to \$1,000,000 the amount which the Shipping Board could expend for repairs on any one of its vessels without authority from Congress. The amendment was designed to prevent the board from proceeding with the work of reconditioning the Leviathan in the absence of an appropriation from Congress. The cost of doing this work, it is estimated, will be approximately \$8,000,000. Efforts are being made by the Massachusetts delegation in Congress to have the vessel reconditioned at the Boston Navy Yard and with this end in view Representative Dallinger of that State was successful in having an amendment incorporated in the appropriation measure which would give navy yards the right to submit estimates to the board for repair of its vessels. The navy yard figures can be only estimates and not specific bids such as are required of private interests and even if the Dallinger amendment passes the Senate, it is not considered likely that it will result in the work being done at a navy yard.

### December Exports of Iron and Steel

Japan takes by far the leading place in American exports of iron and steel in December, according to the following table, prepared by the Department of Commerce. The total shipments amounted to 129,921 gross tons. The leading items sent to Japan comprised: Steel sheets, 29,812 tons; rails, 9650 tons; tin plate, 5974 tons; wrought pipe, 4272 tons; steel bars, 3185 tons; plain wire, 3157 tons; wire rods, 2209 tons, and wire nails, 1918 tons.

	Gross Tons	Per Cent of Total
Japan .....	62,182	47.86
Canada .....	26,147	20.05
Mexico .....	6,507	5.01
British India .....	6,056	4.66
China .....	5,530	4.26
United Kingdom .....	2,372	...
Argentina .....	2,141	...
Cuba .....	2,109	...
Brazil .....	1,939	...
Philippine Islands .....	1,814	...
Hongkong .....	1,611	...
Kwantung (leased territory) .....	1,530	...
Scattering .....	9,983	...



GERMAN IRON AND STEEL EXPORTS

Part of 1921 Shows Sharp Expansion—Comparisons with Other Years—Imports  
(Special Correspondence)

BERLIN, GERMANY, Jan. 6.—As far as it is possible to judge from available data (the returns for the period Jan.-April, 1921, not having been published as yet), October will probably figure as the most noteworthy month last year in German iron and steel exports so far as absolute figures are concerned. Exports of iron and steel and products thereof, not including machinery, amounted to 246,115 metric tons valued at 1,267,789,000 m., as compared with 225,331 tons valued at 1,233,039,000 m. in September, and 234,249 tons valued at 1,764,373,000 m. in November.

STILL IN DOUBT

Attitude of Attorney General As to Trade Associations Not Determined

WASHINGTON, Jan. 31.—Announcement by the Government outlining its policy with regard to trade associations continues to be an indeterminate matter. Attorney General Daugherty this afternoon said that a new draft of a statement had been prepared which he and Secretary of Commerce Hoover might put out jointly, but added that this had not been agreed upon by any means. He further stated that he does not know that anything will come from the Department of Justice except a statement to aid the Department of Commerce. It is the position of the Attorney General that the decision of the Supreme Court in the Hardwood

Iron and Steel					
Product	Exports		Countries	Imports	
	Oct.	Nov.		Oct.	Nov.
Pig iron, including ferroalloys, scrap, etc.	50,381	38,976	Great Britain	55,619	43,512
Piping and pipe shapes of non-malleable material	3,304	1,947	Holland	3,313	1,816
Hardware and other non-malleable iron ware	6,421	6,076	Holland	132	134
Semi-finished materials, rails, crucible steel, blooms, etc.	3,767	2,513	Great Britain	25,992	11,746
Bar iron, section iron	52,022	51,583	Belgium	35,617	18,889
Sheets and plates of all kinds, including tin plate	25,831	27,395	Holland	5,005	2,169
Wire, rolled and drawn, rough and finished	15,730	13,491	Eastern Asia	6,083	3,129
Tubing and piping, rolled and drawn, rough and finished	8,014	9,845	Holland	351	423
Rails, ties, fishplates and other track supplies	26,329	29,825	Holland	8,300	4,307
Railroad axles, car wheels, buffers, springs, etc.	4,422	4,316	Holland		
Malleable iron ware, rough and machined, including boilers, tanks, containers, machine parts, steam fittings, etc.	14,416	14,856	Northern Russia	30	19
Bridges and parts thereof, other structural material	4,613	4,625	Northern Russia	1,244	591
Bolts, nuts and rivets of all kinds	2,726	2,486	Holland	168	70
Wire nails, etc.	6,494	6,310	Holland	645	462
			Eastern Asia	18	18
Machinery					
Locomotives	3,753	4,542	Balkans, Spain	23	..
Steam engines and other prime movers, tractors	2,833	2,857	Sweden	90	53
Machine tools	4,331	4,891	Holland		
Agricultural machinery	2,071	2,201	France	135	31
Textile machinery	2,926	3,075	Belgium	197	82
Automobiles, including chassis; also motor trucks	1,415	1,790	Holland	287	61
Automobiles, number of cars and trucks	670	1,000	Holland	116	90
			Holland	81	70
Motorbicycles, number of engines	300	211	Holland	10	5
			Denmark		

The import figures are 146,695 tons for October, 106,519 tons for September, and 94,222 tons for November.

Striking features of the November returns are the decrease in shipments of pig iron, semi-finished products, bar iron and wire and the increase in sheets, plates, rails, tubing and machinery. Broadly speaking, most of the November figures are lower than the October figures, but still higher than those for September. The notable increase in exports of rails and track supplies to southeastern Asia; British India; Malacca; Ceylon, French, Dutch, and Portuguese Indies; Philippines and Siam deserves mention. Of the totals, 2042 tons, or 5 per cent, was shipped in September, against 3953 tons, or 11 per cent, in October, and 5482 tons, or 18 per cent, in November. As in September, Northern Russia again heads the list in this department.

The swelling of import figures for October and, to a lesser extent, November, is mainly attributable to heavy shipments of pig iron, scrap, old materials, semi-finished products, and a few other commodities by Luxembourg and Alsace-Lorraine.

A tabulation of most of the exports and imports, showing principal importing countries, is given below for October and November. The quantities are metric tons.

Further details of German steel exports and imports for 1921 by months, as compared with other periods, follow:

German Iron and Steel Exports and Imports in Metric Tons		
1921	Exports	Imports
May	129,847	43,880
June	162,297	47,013
July	177,773	55,104
August	240,035	70,008
September	225,331	106,519
October	246,115	146,695
November	234,249	94,222
Total, 7 months, 1921	1,415,647	563,441
Average per month	202,235	80,491
1920, average per month	145,883	34,950
1919, average per month	10,300	38,690
1913, average per month	479,800	23,700

case was explicit as to its meaning, and the department cannot discuss a subject that would make courts think it necessary for the Department of Justice to supplement a decision of the Supreme Court.

It was made clear by the Attorney General that the Department of Justice will not undertake to explain away any decision that might be interpreted as trying to modify a decision or that would "muddy the water" of cases now being prosecuted. It was pointed out that the question is how far trade associations can go in distributing information among their members exclusively as to prices and as to whether the information should be made public and in what manner. The Department of Justice apparently is determined to guard itself against allowing any efforts at violation of the law that might be attempted by use of a statement issued by the department. However, the department still hopes that it will be able to work out a plan to serve as a guide to trade associations, but with the distinct purpose that nothing will be done that might stand in the way of the Hardwood decision.

It is understood that one plan in mind is to have trade associations make information public so as to overcome that feature of the Hardwood decision which condemned the practice of limiting the information to members of the Hardwood association only. This information, it is said, would take on the nature of averages as to production, stock and prices and would not deal with such statistics for individual members of trade associations. It is a question as to how the information would be distributed. Use of the Department of Commerce as the agency for this purpose, it was pointed out, might not be satisfactory on account of the delay incident in preparing the reports and forwarding them to Washington and also by reason of the time this would require, it is contended that the value of the information would be either greatly lessened or entirely destroyed.

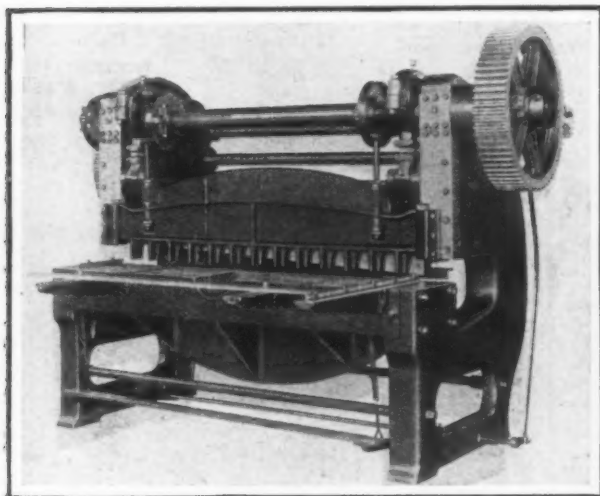
The most logical solution of this problem, according to some officials, would be to use the trade papers as a means for distribution of trade information.

### Improved Gap Shear

A gap shear for cutting  $\frac{1}{2}$  in. and lighter annealed steel, and incorporating features of improved design, has been added to the line of shearing machinery offered by the Streine Tool & Mfg. Co., New Bremen, Ohio.

An outstanding feature is the new design of the cutter bar or cross head, which is of double-ribbed and cross-ribbed box-type construction, as shown in the illustration, and provided with long cross-head bearings fitted into the slides of the housings by means of adjustable hand-scraped taper gibs. This construction is intended to eliminate the use of truss rod or hog chain to keep the cutter bar from springing under strain. The long cross-head bearings with adjustable taper gibs are to prevent the cutter bar from tilting while cutting and thus to permit cutting a clean smooth edge.

The cutter bar is connected to the eccentrics by ad-



The Shear Bed Is Deeply Ribbed and Is Adjustable to Suit the Work. The cutter bar is of double-ribbed and cross-ribbed construction, as shown in view to right

justable links, thus allowing the shear knives to be set by raising or lowering the cutter bar, either to split long stock or do plain shearing to the full length of the knives. The hold down or clamp is automatically operated and equipped with compensating springs to take care of unevenness in the thickness of the metal to be sheared.

A full set of front, side and back gages is provided, the back gage being of the parallel-screw and miter-gear operated type. It is operated with a crank handle and the miter shaft is made of two pieces, joined by a sleeve, which can be loosened and the gage set parallel with blades or otherwise without loss of time.

The shear bed is deeply ribbed and can be adjusted to suit the requirements of the work. Parallel graduations in sixteenths of an inch are marked from the edge of the shear blades to the ends of the front gage supports thus permitting quick and accurate setting of the gages. The eccentrics are double keyed and shrunk on the eccentric shaft, the bearings of which are split and can be readily adjusted or replaced. All shafts are of large diameter and gears machine cut, the gears being made of semi-steel castings and the pinions of steel forgings. The clutch is of forged steel and is fitted with tool steel clutch pin and finger.

This shear can also be arranged for motor drive or equipped with a long squaring arm. The machine illustrated is the 6 ft. shear, but other lengths can be supplied. The specifications give length of shear blades as 74 in. and approximate weight of the machine as 18,500 lb. The flywheel pulley is 42 in. by 7 in., weighs 1260 lb. and runs at 280 r.p.m. The strokes of the cutter bar are 18 per min., and the ratio of gearing 16 to 1. The floor space required is 84 by 120 in. A 15-hp. motor, 900 to 1800 r.p.m., is recommended.

### Thermal Stresses in Steel Car Wheels

On Dec. 10 a conference was held at the Bureau of Standards, Washington, to discuss the accumulated data obtained in thermal tests of steel car wheels. Representatives of various manufacturers and purchasers of steel wheels were present. The results obtained in the tests of 16 wheels completed to date were discussed, the interesting features of which may be summarized as follows:

None of the steel wheels failed.

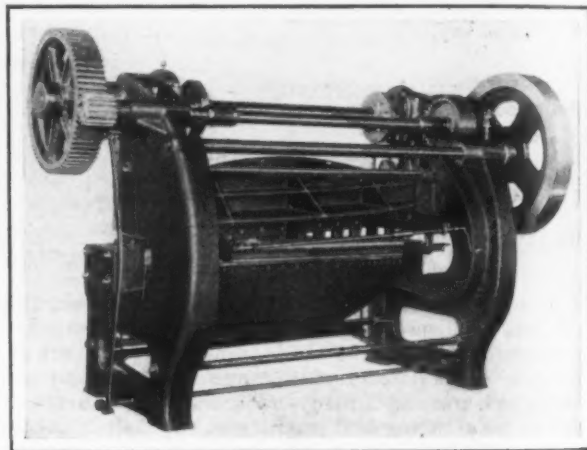
Because of the movement of the hub with respect to the rim, on account of the heating of the rim, a beam effect is produced in the plate which induces tensional stresses near the hub and stresses in compression near the rim on the face of the plate, while on the back of the plate the stresses are approximately equal in magnitude but reverse in nature.

These effects were observed in new wheels, while in the case of old wheels the stresses on the face of the plate were in tension near the hub and at the rim they decrease to practically nothing, this difference from the new wheel probably being due to the quantity of metal worn away.

The magnitude of the maximum stresses developed approximated the yield point of the material as determined in tensile tests.

After the first "run" on the new wheels, an apparent set was obtained which was not the case in succeeding runs nor in runs on old wheels. The maximum stresses were in the surface of the plates and beyond the yield point of the material.

It was suggested by one representative that tests on wheels with thinner plates be made in order to



determine the effect of plate thickness on induced stresses. One of the steel companies expressed a willingness to furnish wheels for this test, and the matter is now being considered.

Further work on single plate chilled iron wheels seems justified in view of the fact that a survey of the stresses on the back of the plate of this type of wheel was not made. From experience with the steel wheels, it is believed that the stresses will be quite different from those on the face.

The stockholders of the Bridge & Beach Mfg. Co., St. Louis, have re-elected the following directors: Hudson E. Bridge, L. H. Booch, Henry C. Hoener, John F. Shepley, Louis H. Riecke, Laurence D. Bridge and George Leighton Bridge. The board elected the following officers: Hudson E. Bridge, president and treasurer; L. H. Booch, vice-president and manager; Henry C. Hoener, vice-president; Louis H. Riecke, secretary; George Leighton Bridge, assistant secretary; A. F. Gammeter, assistant treasurer; Laurence D. Bridge, assistant treasurer.

The Laconia Car Co., Laconia, N. H., is delivering cars on repair contracts at the rate of 32 per week, but shortly expects to increase this to 40 cars. The company has sufficient car repair work on its books to keep its plant operating at its present capacity until Nov. 1 next. The company's foundry is inactive, however.



### Obsolete Naval Vessels Sold

WASHINGTON, Jan. 31.—The Henry A. Hitner's Sons Co., Philadelphia, has been awarded eight of the nine obsolete naval vessels recently offered for sale by the Navy Department. This salvaging company's aggregate bid for the eight vessels was \$235,000, which was submitted on the basis of "all or none." The vessels going to the Hitner company include the battle-ships Maine, Missouri and Wisconsin; the cruiser Columbia, and the monitors Puritan, Ozark, Tonopah and Miantonomah. The ninth ship, the old cruiser Memphis, was awarded to the A. H. Radetsky Mine & Metal Co., Denver, for \$3,000. The Memphis is a wreck on the shores of Santo Domingo.

The salvaging of these obsolete ships will occasion the greatest undertaking of this kind ever engaged upon in the United States, and is regarded as a possible forerunner of the establishing of a regular ship salvaging industry on a broad scale, provided terms of the conference on the limitation of armaments are finally agreed upon and a permanent and adequate American merchant marine is created.

### Proposed Reduction of Miners' Wages

PITTSBURGH, Jan. 30.—An echo of the recent refusal of operators in the different fields of the so-called central competitive district to enter into preliminary conferences with representatives of the United Mine Workers of America, to discuss a new wage scale to become effective with the expiration of the present one on March 31 next, is found in an announcement late last week by the Pittsburgh Coal Producers' Association and the Southern Ohio Coal Operators' Association setting up new scales to become effective April 1 next, which reduce wages roughly from 30 to 40 per cent. The check-off system, whereby the operators collected and paid over to the union the dues of workmen, is eliminated, and when the United Mine Workers of America meet in Indianapolis on Feb. 14, for the annual wage scale convention, they will also have to consider dealing with the operators in the several districts individually, instead of for the entire so-called central competitive district as has been the case heretofore. As was to be expected, the action of the Pittsburgh and southern Ohio district operators find disapproval among union leaders and already there are suggestions of a strike, as of April 1.

### Roofing Shingles of Copper

The Anaconda Copper Mining Co. has secured a contract to cover with copper shingles the roof of the new Holy Innocents Church in Brooklyn. This shingle comes in three sizes—6 x 18 in., 8 x 18 in. and 8 x 60 in., and weighs approximately 84 lb. a square of 100 ft., a light material for roofing purposes. This weight compares with 200 lb. for the wooden shingle, 400 to 600 lb. for asbestos, 750 to 1200 lb. for slate and 1000 to 2000 lb. for tile of the same area. Anaconda's shingle is made of a specially developed grade of copper 99.95 per cent pure. The present plant at Perth Amboy, N. J., which will start operations Feb. 1, can turn out more than 500 squares daily. Its capacity will be increased to meet demand.

### Electrical Properties of Titanium Alloys

The electrical properties of titanium alloys have been investigated at the Rensselaer Polytechnic Institute, Troy, N. Y., and the investigation is the subject of No. 12 of the Engineering and Science Series of that institution, published by the authors, M. A. Hunter and J. W. Bacon. A summary of the results of the investigation is as follows:

The addition of titanium to iron improves the magnetic quality of the iron. The magnetization curves are invariably higher and the hysteresis losses lower than in an untreated specimen.

The action is attributed to a cleansing of the material by the addition of titanium. If additions are made in such amounts that titanium is left in the iron, the material improvement is no longer apparent. The samples will under

these conditions be lower in magnetic quality than the original iron.

Good results were obtained by treating silicon-iron with titanium. These alloys gave an exceedingly high permeability and low hysteresis loss.

The aging of the titanium-treated specimens was of the order of that of iron, though somewhat less in degree.

Alloys of titanium with nickel, copper, nickel-iron and nickel-copper were made. The specific resistance of these materials are only moderately high for additions of titanium up to 5 per cent. Beyond this point the alloys are exceedingly hard to draw. Such wires as were made can be run continuously only at low temperatures by reason of their tendency to oxidation when run at a red heat.

### Sheet Metal Contractors' Association

At the annual convention of the Sheet Metal Contractors' Association of Pennsylvania, held in Reading, Pa., Jan. 26 and 27, the following officers were elected: President, Louis Luckhardt, J. D. McIlroy & Sons, Pittsburgh; first vice-president, Charles A. Bachman, Easton, Pa.; second vice-president, Joseph Urban, Reading, Pa.; secretary, W. F. Angermeyer, W. F. Angermeyer & Co., Pittsburgh; treasurer, G. C. Krack, Gus. A. Krack & Sons, Erie, Pa.; directors, W. H. Tinney, Philadelphia, and N. F. Bantham, Wilkes-Barre, Pa. Announcement was made of the organization of the salesman's auxiliary affiliated with the association. Officers of the auxiliary follow: President, Thomas R. Cook, Philadelphia; first vice-president, Warren Carter, Philadelphia; second vice-president, C. J. Deshore, Philadelphia; secretary, Oliver C. Brooks, Philadelphia; treasurer, William Gowan, Pittsburgh. Directors, George J. Claudice, Baltimore; Thomas Quinn, Philadelphia; George Gock, Philadelphia; John Follansbee, Pittsburgh, and George Johnson, Pittsburgh.

### Anaconda's Acquisition of American Brass Co.

The acquisition recently of the American Brass Co., Waterbury, Conn., by the Anaconda Copper Mining Co., has been referred to by officials of the latter company as a step that will place the company's business on a sound foundation. The Anaconda company, in the five plants east of the Mississippi River which it has acquired, has a capacity equal to approximately 40 per cent of the total copper and brass manufacturing business of the country. The acquisition of the brass company will mean the absorption of practically the entire copper output of the Anaconda Copper Mining Co. by the new subsidiary. In June, 1918, the Anaconda company opened a wire mill at Great Falls, Mont., which up to the end of last year had rolled into rods and drawn into wire 166,000,000 lb. of copper.

The Anaconda company has been a producer of copper, zinc, lead, gold, silver, ferromanganese, sulphuric acid, copper rods and wire, copper and zinc shingles white lead, etc.

### Corrosion of Steels

Laboratory work relating to the determination of the relative resistance of certain alloy steels to corrosion when submitted to combined weathering and immersion in distilled water was completed recently by the Bureau of Standards. Based on exposure of 19 days, the polished samples of steel showed the best resistance to corrosion in the order given below:

Annealed stainless steel (carbon, 0.15; chromium, 13 per cent).

Annealed high chromium and high nickel steels.

Forged stainless steel.

Cast iron chromium alloy (carbon, 0.04; chromium, 6.5 per cent).

Annealed chromium steel (carbon, 0.20; chromium, 8.6 per cent).

Annealed chromium steel (carbon, 0.30; chromium, 5.72 per cent).

Annealed chromium steel (carbon, 0.28; chromium, 3.90 per cent).

Pure iron.

Iron carbon alloy (carbon, 0.45 per cent).

# List Prices and Discounts on Steel Castings

## American Steel Foundries Makes Public New Method of Quoting Its Products—Important Departures from the War Committee Schedules

THE American Steel Foundries, Chicago, manufacturer of steel castings, with plants distributed throughout the country, has announced list prices and discounts on its products, effective Feb. 1. The new prices cover 30 different classes of castings under which 195 separate discounts are listed. The classifications, the prices and the discounts were worked out after two years of exhaustive study by the company, and are believed to be on the lowest possible basis compatible with the costs of any producer in the industry.

The idea of preparing quotations of general application is not a new one in the steel castings field; neither is it an innovation to make a careful study of the costs of different classes of casting work with the view of arriving at proper spreads in prices. For some years prior to the war, the steel foundry industry carried on an investigation of costs, and during the war, at the instance of the Committee on Steel and Steel Products of the American Iron and Steel Institute, maximum prices were established which prevailed throughout 1918. This schedule, it is to be noted, remained in effect notwithstanding uninterrupted increases in labor costs. With the coming of the armistice and the subsequent efforts of the Government to stabilize prices on a lower level through the medium of the Industrial Board of the Department of Commerce, the same committee which represented the steel castings industry in establishing the war schedule prepared new prices which were 12½ per cent below those previously in force. While these prices were never submitted to the Industrial Board, they were generally used by the industry for the remainder of 1919. In 1920 advances in the cost of labor and raw materials made two increases necessary—one in the first quarter and the other in the second quarter. Since the beginning of 1921, prices have declined steadily, and here and there in the industry business is known to have been taken at a loss.

The new prices and discounts announced by the American Steel Foundries will tend to discourage the taking of business at a loss in lean times and likewise restrain the naming of excessive prices in brisk periods. Prices, of course, should have a proper relation to costs, and in this respect it is felt that the new list will prove an education to the buying public.

The schedule of the American Steel Foundries differs in a number of important particulars from the maximum war prices of 1918. In the latter, separate prices were fixed for each class and subdivision of that class. The new schedule carries only 17 list prices graduated according to weight, and 12 extras for carbon, nickel, chrome content, etc. It is felt that this method of quoting is far simpler than that followed during the war and therefore more intelligible to the trade. In the war schedule there was no uniformity in the gradations of prices per weight. For example, under "Propeller Wheels" separate prices were quoted for weights 101 to 300 lb. inclusive, 301 to 600 lb. inclusive, 601 to 1000 lb. inclusive, etc., while under "Crane Castings" separate quotations were named for weights 1 to 10 lb. inclusive, 11 to 25 lb., 26 to 50 lb., etc. Under the American Steel Foundries schedule, the same weight classification applies to all castings. The list prices fixed for each division of weight will remain unchanged, but the discounts will vary from

time to time according to market conditions. A similar method of quoting has long been the rule on steel pipe, bolts and nuts, and valves and fittings.

The new schedule is also more specific than that of the war period. Whereas the general classifications are similar to those used for war prices, many more component items are included. Where a single price was quoted for a class under the war schedule, the American Steel Foundries names separate discounts for all of the important kinds of castings composing that class. Thus due allowance is made for differences in design and size of product.

Under the appended list prices and discounts, freight is allowed to customers whose plants are located within the area demarcated by a line drawn from Boston through Schenectady, Rochester, Niagara Falls, Detroit, Duluth, St. Louis, Cincinnati, Washington, Cape May, N. J., and other Atlantic ocean terminal points between Cape May and Boston. Customers located outside of this territory will pay the freight from the boundary line. This is the same practice which was employed under the war-time prices, and is explained by the fact that most of the steel foundry capacity of the United States lies within the territory above defined.

### List Price of Steel Castings per 100 lb., According to Unit Weight

These prices cover steel castings produced in accordance with the requirements of the American Society for Testing Materials' standard specifications for steel castings

Over 1 to 10 lb. each.....	\$32.60
Over 10 to 25 lb. each.....	22.40
Over 25 to 50 lb. each.....	17.95
Over 50 to 75 lb. each.....	15.55
Over 75 to 100 lb. each.....	14.65
Over 100 to 150 lb. each.....	13.45
Over 150 to 200 lb. each.....	12.85
Over 200 to 300 lb. each.....	11.90
Over 300 to 500 lb. each.....	11.30
Over 500 to 750 lb. each.....	10.60
Over 750 to 1,000 lb. each.....	10.30
Over 1,000 to 2,000 lb. each.....	9.80
Over 2,000 to 3,000 lb. each.....	9.35
Over 3,000 to 5,000 lb. each.....	9.20
Over 5,000 to 10,000 lb. each.....	8.95
Over 10,000 to 50,000 lb. each.....	8.50
Over 50,000 lb. each.....	9.95

### Extras to Be Added to Net Prices

For carbon, 0.30 to 0.70 per cent.....	Add \$0.25 per 100 lb.
For carbon, 0.70 to 1.00 per cent.....	Add 0.50 per 100 lb.
For carbon, 1.00 to 1.25 per cent.....	Add 0.75 per 100 lb.
For carbon, 1.25 to 1.50 per cent.....	Add 1.00 per 100 lb.
For carbon, 1.50 and over.....	Add 1.75 per 100 lb.
For 2½ to 3½ per cent nickel.....	Add 3.00 per 100 lb.
For 0.18 per cent vanadium.....	Add 3.40 per 100 lb.
For 1 per cent chromium.....	Add 1.50 per 100 lb.
For 1 per cent chromium and 2 per cent nickel.....	Add 3.25 per 100 lb.
For 1 per cent chromium and 0.18 per cent vanadium.....	Add 4.90 per 100 lb.
For any portion of titanium.....	Add 1.00 per 100 lb.
For steam test on any castings.....	Add 0.50 per 100 lb.

### Freight Allowance

The prices obtained after applying the discounts cover the castings in the rough, f.o.b. our works, with published rate of freight allowed to the freight station of the purchaser, other than railroads, located within a line drawn from Boston through Schenectady, Rochester and Niagara Falls, N. Y., Detroit, Duluth, St. Louis, Cincinnati, Washington, Cape May, N. J., and other Atlantic Ocean terminal points between Cape May and Boston. Prices to railroads are f.o.b. our works with published rate of freight allowed to the nearest point on the line of their road located in the territory mentioned above. For deliveries outside of the territory mentioned on shipments to all purchasers freight will be allowed only to the boundary line; the excess to be paid by the purchaser.



## Discounts as of Feb. 1, 1922, According to Class of Castings

<b>Grade Plates</b>	
In lots of 100 to 249 pieces.....	50 per cent
In lots of 250 to 499 pieces.....	55 per cent
In lots of 500 and over.....	60 per cent

<b>Blast Furnace Castings</b>	
Gears, pinions, segments and racks.....	*
Worms, worm wheels, sprockets, sheaves and pulleys.....	*
All other castings used in the construction or repair of blast furnaces.....	25 per cent

<b>Boiler Castings, Flanges and Fittings</b>	
Ammonia fittings.....	10 per cent
Ball and socket joints for dredges.....	25 per cent
Boiler saddles.....	25 per cent
Cross boxes.....	25 per cent
Crossovers.....	10 per cent
Dredge piping.....	25 per cent
Flanges, in lots of 1 to 49 pieces.....	35 per cent
Flanges, in lots of 50 to 99 pieces.....	40 per cent
Flanges, in lots of 100 and over.....	45 per cent
Handhole frames and covers.....	25 per cent
Headers.....	10 per cent
High-pressure flange fittings.....	25 per cent
Hydraulic fittings.....	25 per cent
Low-pressure flange fittings.....	10 per cent
Manhole frames and covers.....	25 per cent
Manifolds.....	10 per cent
Nozzles.....	25 per cent
Steam piping of heavy section.....	25 per cent
Steam piping of light section.....	10 per cent
Steam separators.....	10 per cent
Steam traps.....	10 per cent
Valve bodies.....	25 per cent
Valve parts.....	25 per cent

<b>Bridge Castings</b>	
Bridge blocks, column bases and shoes:	
In lots of 1 to 49 pieces.....	55 per cent
In lots of 50 and over.....	60 per cent
Gears, pinions, segments and racks.....	*
Worms, worm wheels, sprockets, sheaves and pulleys.....	*

<b>Car Castings</b>	
Bolster center fillers and rear draft lugs combined:	
Bolster center fillers and backstops combined:	
Center plates and bolster center fillers combined:	
Striking castings and center sill connections combined:	
Striking castings and front draft lugs combined:	
In lots of 1 to 49 pieces.....	35 per cent
In lots of 50 to 99 pieces.....	40 per cent
In lots of 100 to 249 pieces.....	45 per cent
In lots of 250 to 499 pieces.....	50 per cent
In lots of 500 to 999 pieces.....	55 per cent
In lots of 1,000 and over.....	60 per cent
Bolster center fillers, plain:	
Hoping and jacking castings:	
Truck columns—box section:	
In lots of 1 to 49 pieces.....	40 per cent
In lots of 50 to 99 pieces.....	45 per cent
In lots of 100 to 249 pieces.....	50 per cent
In lots of 250 to 499 pieces.....	55 per cent
In lots of 500 to 999 pieces.....	60 per cent
In lots of 1,000 and over.....	65 per cent
Journal box wedges, cored type:	
Push pole pockets:	
Striking castings, plain:	
Truck columns, U section:	
Miscellaneous freight car castings:	
In lots of 1 to 49 pieces.....	45 per cent
In lots of 50 to 99 pieces.....	50 per cent
In lots of 100 to 249 pieces.....	55 per cent
In lots of 250 to 499 pieces.....	60 per cent
In lots of 500 to 999 pieces.....	65 per cent
In lots of 1,000 and over.....	70 per cent

Center plates, plain:	
Coupler carriers, plain:	
Draft lugs, short:	
Side bearings, plain:	
In lots of 1 to 49 pieces.....	50 per cent
In lots of 50 to 99 pieces.....	55 per cent
In lots of 100 to 249 pieces.....	60 per cent
In lots of 250 to 499 pieces.....	65 per cent
In lots of 500 to 999 pieces.....	70 per cent
In lots of 1,000 and over.....	75 per cent
Journal box wedges, solid type:	
In lots of 1 to 49 pieces.....	55 per cent
In lots of 50 to 99 pieces.....	60 per cent
In lots of 100 to 249 pieces.....	65 per cent
In lots of 250 to 499 pieces.....	70 per cent
In lots of 500 to 999 pieces.....	75 per cent
In lots of 1,000 and over.....	80 per cent
Journal boxes, all types.....	†
Passenger car castings, all types.....	†

<b>Cement Mill Castings</b>	
Gears, pinions, segments and racks.....	*
Rolling rings.....	35 per cent
Rollers.....	45 per cent
Tires.....	35 per cent
Worms, worm wheels, sprockets, sheaves and pulleys.....	*
Miscellaneous castings for cement mills.....	35 per cent

<b>Centrifugal Pump Castings</b>	
Castings.....	†
Impellers.....	†
Miscellaneous castings.....	†

<b>Copper Mine and Smelting Plant Castings</b>	
Copper ladles.....	30 per cent
Copper molds.....	45 per cent
Grizzly bars.....	45 per cent
Slag ladles.....	30 per cent
Slag molds.....	45 per cent
Miscellaneous castings.....	40 per cent

<b>Crane Castings</b>	
Brake wheels.....	10 per cent
Bumper hoods.....	10 per cent
Center stem castings.....	10 per cent
Charging bar supports.....	10 per cent
End carriages.....	20 per cent
Gear covers.....	10 per cent
Gears, pinions, segments and racks.....	*
Guide brackets.....	10 per cent
Hollow shafts and stems.....	10 per cent
Long hollow rack castings.....	net
Motor supports.....	10 per cent
Peels and peel heads.....	10 per cent
Ram frames.....	10 per cent
Sheave guards.....	10 per cent
Stripper rams and sleeves.....	10 per cent
Trolley frames.....	10 per cent
Truck castings.....	20 per cent
Worms, worm wheels, sprockets, sheaves and pulleys.....	*
Miscellaneous castings.....	30 per cent

<b>Die Blocks</b>	
	50 per cent
<b>Dredge Castings</b>	
Ball and socket joints.....	25 per cent
Cutter heads.....	†
Dredge piping.....	25 per cent
Gears, pinions, segments and racks.....	*
Worms, worm wheels, sprockets, sheaves and pulleys.....	*
Miscellaneous dredge castings.....	†

<b>Engine Castings</b>	
Chambered pistons.....	10 per cent
Counter balances.....	45 per cent
Crank disks.....	45 per cent
Crank webs.....	45 per cent
Cylinder heads.....	10 per cent
Gas engine cylinders in one piece.....	†
Gas engine cylinders in two pieces.....	†
Flywheels.....	45 per cent
Flywheel hubs.....	45 per cent
Flywheel segments.....	45 per cent
Miscellaneous engine castings.....	30 per cent

<b>Gears, Pinions, Segments, Racks, Etc.</b>	
Gears, pinions, segments and racks:	
In lots of 1 to 49 pieces.....	40 per cent
In lots of 50 to 99 pieces.....	45 per cent
In lots of 100 and over.....	50 per cent
Machine molded gears.....	†
Railway motor gears.....	†
Worms, worm wheels, sprockets, sheaves and pulleys:	
In lots of 1 to 49 pieces.....	25 per cent
In lots of 50 to 99 pieces.....	30 per cent
In lots of 100 and over.....	35 per cent

<b>Hammer Heads</b>	
	50 per cent

<b>Hammer Rams</b>	
	50 per cent

<b>Hydraulic Machinery Castings</b>	
Accumulator cylinders:	
With walls over 1½ in. thick and simple flange on one end.....	20 per cent
With walls 1½ in. thick, or less, and with simple flange on one end.....	10 per cent
All other types of accumulator cylinders.....	net
Hydraulic press cylinders:	
Of plain surface with standard rectangular flange.....	35 per cent
Of irregular contour, with wings or special cored openings, and flanges.....	25 per cent
Head castings.....	50 per cent
Nut castings.....	55 per cent
Platen castings.....	50 per cent
Miscellaneous castings.....	40 per cent

<b>Jaw and Gyratory Crusher Castings</b>	
Gears, pinions, segments and racks.....	*
Gyratory crusher housings.....	25 per cent
Jaw crusher frames.....	25 per cent
Worms, worm wheels, sprockets, sheaves and pulleys.....	*
Miscellaneous castings.....	40 per cent

<b>Locomotive Castings</b>	
Driving wheel centers.....	50 per cent
Engine frames, weighing less than 1000 lb. each.....	15 per cent
Engine frames, weighing 1000-5000 lb. each.....	25 per cent
Engine frames, weighing 5000 lb. each and over.....	40 per cent
Miscellaneous locomotive castings.....	40 per cent

<b>Marine Castings</b>	
Propeller blades.....	10 per cent
Propeller hubs.....	45 per cent
Propeller wheels.....	net
Stern frames for merchant ships:	
In one piece.....	5 per cent
In two pieces.....	20 per cent
In over two pieces.....	25 per cent
All other marine castings.....	†

<b>Mine and Industrial Car Castings</b>	
Column guides, cradles, rockers and pedestals:	
In lots of 1 to 49 pieces.....	30 per cent
In lots of 50 to 99 pieces.....	35 per cent
In lots of 100 to 249 pieces.....	40 per cent
In lots of 250 to 499 pieces.....	45 per cent
In lots of 500 and over.....	50 per cent
Bumpers and link and pin drawheads:	
In lots of 1 to 49 pieces.....	40 per cent
In lots of 50 to 99 pieces.....	45 per cent
In lots of 100 to 249 pieces.....	50 per cent
In lots of 250 to 499 pieces.....	55 per cent
In lots of 500 and over.....	60 per cent
Miscellaneous castings:	
In lots of 1 to 49 pieces.....	35 per cent
In lots of 50 to 99 pieces.....	40 per cent
In lots of 100 to 249 pieces.....	45 per cent
In lots of 250 to 499 pieces.....	50 per cent
In lots of 500 and over.....	55 per cent

\* † See footnotes on page 350.

**Mine and Industrial Car Wheels**

Irregular designs, including self-oilers, special flanged wheels, special hubs and special treads:	
In lots of 1 to 49 pieces.....	30 per cent
In lots of 50 to 99 pieces.....	35 per cent
In lots of 100 to 249 pieces.....	40 per cent
In lots of 250 to 499 pieces.....	45 per cent
In lots of 500 and over.....	50 per cent
Single flange, web plate wheels, with plain hub:	
In lots of 1 to 49 pieces.....	40 per cent
In lots of 50 to 99 pieces.....	45 per cent
In lots of 100 to 249 pieces.....	50 per cent
In lots of 250 to 499 pieces.....	55 per cent
In lots of 500 and over.....	60 per cent
Single flange, spoke center wheels with plain hub:	
In lots of 1 to 49 pieces.....	35 per cent
In lots of 50 to 99 pieces.....	40 per cent
In lots of 100 to 249 pieces.....	45 per cent
In lots of 250 to 499 pieces.....	50 per cent
In lots of 500 and over.....	55 per cent
<b>Refractory and Brick Yard Castings</b>	
Bottom plates.....	40 per cent
Inside circle plates.....	50 per cent
Outside circle plates.....	50 per cent
Pan rims.....	25 per cent
Roller tires.....	35 per cent
Scraper plates.....	45 per cent
Toggle plates.....	45 per cent
Miscellaneous castings.....	30 per cent
<b>Riveter Castings</b>	
Arms for boiler riveters.....	20 per cent
Riveter frames.....	50 per cent
Riveter stakes.....	50 per cent
Miscellaneous castings.....	40 per cent
<b>Road and Mining Machinery Castings</b>	
Miscellaneous castings.....	40 per cent
<b>Rolling Mill Castings</b>	
Annealing bottoms.....	55 per cent
Annealing boxes and pots.....	35 per cent
Anvil blocks.....	50 per cent
Blast furnace castings.....	**
Charging boxes.....	50 per cent
Charging box heads and ends.....	50 per cent
Coupling boxes.....	55 per cent
Cylinders.....	30 per cent
Gears, pinions, segments and racks.....	*
Housings, roll and pinion.....	50 per cent
Mill pinions, unfinished, less than 1000 lb. each.....	20 per cent
Mill pinions, unfinished, 1000-5000 lb. each.....	30 per cent
Mill pinions, unfinished, 5000 lb. each and over.....	40 per cent
Rolls, unfinished, less than 1000 lb. each.....	30 per cent
Rolls, unfinished, 1000-5000 lb. each.....	40 per cent
Rolls, unfinished, 5000 lb. each and over.....	50 per cent
Spindles, solid.....	50 per cent
Spindles, hollow.....	45 per cent
Table rollers, hollow and disk.....	30 per cent
Worms, worm wheels, sprockets, sheaves and pulleys.....	•
Miscellaneous rolling mill castings.....	40 per cent
Machine work prices.....	†
<b>Snow Plow Castings</b>	
Miscellaneous castings for snow plows.....	†
<b>Steam Shovel Castings</b>	
Miscellaneous castings for steam shovels.....	†
<b>Sugar Mill Castings</b>	
Couplings.....	55 per cent
Crown wheels.....	55 per cent
Crusher rolls.....	20 per cent
Gears, pinions, segments and racks.....	•
Housings.....	50 per cent
Worms, worm wheels, sprockets, sheaves and pulleys.....	•
Miscellaneous sugar mill castings.....	40 per cent
<b>All Other Classes</b>	
Other steel castings not covered above.....	†

\*For discounts on this class of work see "Gears, Pinions, Segments and Racks."

\*\*For discounts on this class of work see "Blast Furnace Castings."

†Discounts on this class of work will be furnished on receipt of inquiry and drawings showing the castings desired.

‡Net prices on machine work will be quoted on application

**Production of Bauxite in 1921**

The production of bauxite in the United States for 1921 is estimated by the U. S. Geological Survey at approximately 130,000 gross tons as compared with 521,308 tons in 1920, a decrease of 391,308 tons. This great decrease is largely the result of the curtailed demand for aluminum, particularly aluminum used in the automobile industry, though the curtailed consumption of chemicals containing alumina lessened the output of some of the mines, particularly in the Georgia-Alabama field.

After a period of inactivity extending over a month or so, the New Haven Clock Co., New Haven, Conn., has resumed operations with approximately 1500 employees. The present schedule calls for about 65 per cent of capacity. Indications are, however, the schedule will shortly be increased.

**QUALITY OF THERMOCOUPLES****Effect of Small Percentage of Impurities in Platinum-Rhodium Wires**

Tests made by the pyrometry laboratory of the Bureau of Standards early in 1921 revealed the fact that many of the platinum-rhodium thermocouples found on the American market were subject to large changes in indication after long continued exposure to very high temperatures.

The wires from which these thermocouples were made were obtained from two sources, one American and one British. The tests showed that the former were of satisfactory purity for the use to which such couples are applied. They satisfactorily met all industrial requirements as to constancy and reliability if properly protected by well-known methods of insulation.

The British refined metals and alloys were found to be subject to large changes in their indications after their exposure to high temperatures. Chemical and spectroscopic tests revealed the fact that the trouble was due to the presence of several tenths per cent of iron in the platinum-rhodium alloy wire. The platinum wires, on the other hand, were found to be of high and satisfactory degree of purity.

The facts developed by these tests were immediately communicated to the firms engaged in refining the metals used for thermocouples, as well as to manufacturers of pyrometers who were employing them in their pyrometric installations. As a result of these tests, the British firm determined to improve its product and immediately took up the problem of producing new platinum-rhodium alloys free from the presence of iron or other impurities. Samples of their improved wire were submitted to the Bureau for tests a few months ago, and the results show the new couples to be eminently satisfactory. Therefore, at the present time purchasers have a choice of two makes of wire, either of which will prove to be satisfactory.

This work has resulted in a marked advance in reliability of high temperature measurements, since it has brought about the general use of materials of sufficiently high purity to remove an important cause of variations in thermocouple indications.

**Cobalt Magnet Steel**

A new formula for making magnet steel is coming into use, the principal change from the ordinary practice being the employment in its composition of cobalt instead of tungsten, says the London *Ironmonger*. Hitherto such steel has contained about 5½ per cent of tungsten, and the substitution of about 15 per cent of cobalt raises the coercive force of the material from 60 to 250, making it possible to use smaller magnets. The use of the new steel necessitates a new form of magnet, consisting merely of two small flat plates of steel placed on the sides of the armature, hence if it should come into general use the familiar horseshoe-shaped magnet will disappear. As yet, however, cobalt magnet steel is only in the experimental stage. Cobalt magnet steel costs three or four times as much as tungsten steel, but a much smaller magnet is required to do a given amount of work.

**Large Portland Cement Output in 1921**

Except for 1920, the 1921 production of portland cement in the United States, according to the Geological Survey, was greater than for any other year in our history. The total, reaching 98,293,000 bbl., compares with approximately 100,000,000 bbl. in 1920, and smaller quantities in preceding years. Production during the year showed a steady growth from 4,098,000 bbl. in January to more than 10,000,000 bbl. in August, September and October, falling, from seasonal causes, to 6,559,000 bbl. in December. Shipments followed a similar but much more pronounced trend leaving stock at the end of the year amounting to 11,938,000 bbl.



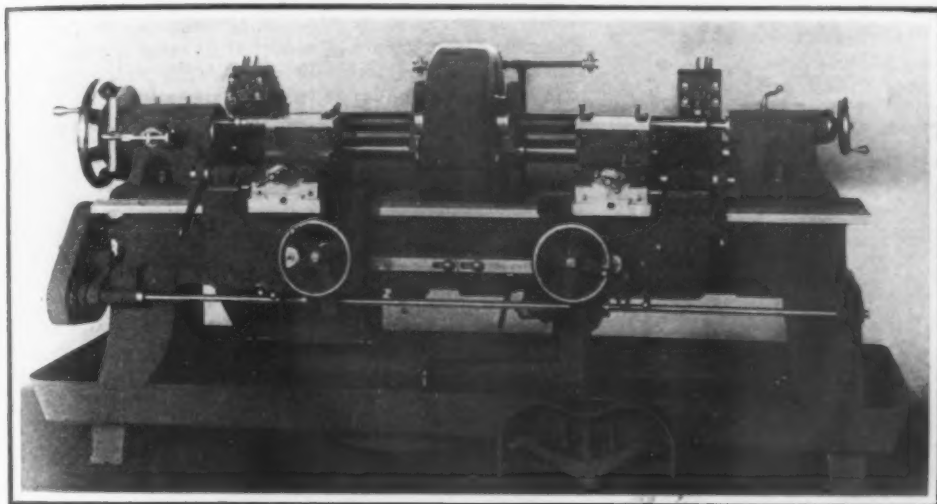
### Center-Drive Lathe for Mine Car Axles

The center-drive lathe with short head, shown in the accompanying illustration, is being offered by the Reed-Prentice Co., Worcester, for turning mine-car axles and similar work. It was originally designed for turning the rear axles of small automobiles, but is said to have proved of equal value in other fields, its only limitation being that the work cannot be turned in the middle portion, as this is where it is gripped in the machine.

The head stock carries two chucks, one at each end of the spindle. These are generally of the floating type, so that they will position themselves relative to the outside diameter of the work when the jaws are tightened, at which point they are securely clamped against the shoulder on the main spindle. By this means the work is positively driven and, being held

The carriages have their bridges set off center, permitting a close-up position to the head stock. The blocks are arranged to receive special magazine tool holders. Each carriage is provided with an eccentric link motion, which by a slight effort of the operator feeds the tools into a predetermined diameter, at which point they automatically lock. The longitudinal feed of the carriages is then engaged and after turning the desired length, a tripping mechanism automatically releases the link and cam actions, which immediately allows the tools to recede from the finished work so that they will not score the work when they are returned to their starting position. Each carriage has an individual automatic feed trip, although both are driven by a single set of feed gearing at the extreme left of the machine. Both carriages feed simultaneously toward the head stock.

In the machine illustrated a back-arm attachment



Center Drive Lathe for Turning Both Ends of Mine-Car Axles and Similar Work. For long or short work, either tailstock may be unclamped and moved to proper position. The carriages have their bridges off-center, permitting a close-up position to headstock.

rigid, maintains the natural position of the shaft without deflection. The spindle is of cast iron and has a large hole through it. It rotates in cast iron journals, having a driving gear mounted directly on the spindle. In cases where the shafts are particularly short, one of the chucks is omitted, to permit the carriages to come closer to the head stock. The drive to the head stock spindle is from a  $7\frac{1}{2}$ -hp. motor mounted at the rear of the bed and driving direct to the sprocket gear on the head spindle through silent chain. The motor is controlled by a foot treadle at the front of the machine which actuates a clutch, releasing the gearing in the head without stopping and starting the motor.

The left-hand tail stock has an extra large spindle with two holes running through its entire length, one of which carries a standard center, the other acting as a clearance hole through which the work is telescoped in loading and unloading the machine. By withdrawing the index plunger, which is shown at the front of the left tail stock, the spindle may be revolved, bringing the clearance hole into proper alignment with the hole in the head-stock spindle, at which position the work may be entered or withdrawn from the head stock. After the work has been passed into the head, the index plunger is released and the spindle rotated 180 deg., this bringing the center into proper position for guiding the work. The withdrawal of the index plunger is automatically actuated by the rotation of a large hand wheel, due to a certain angle of free rotation in which the cam surface on the hub of the hand wheel withdraws the plunger. By continuing to rotate the hand wheel the spindle picks up the motion and finally brings the center or clearance hole into the desired position.

There is no endwise adjustment to the left hand spindle, this being taken care of by the longitudinal action of the spindle in the right-hand tail stock, which is similar to the standard engine-lathe type. Either tail stock may be unclamped from the bed and moved to the proper position to accommodate long and short work.

has been incorporated for each carriage so that the squaring of shoulders, as well as grooving at the end of the shafts, can be performed simultaneously with the turning operation. It is not essential, however, that the machine be equipped with this arrangement. Various set-ups are possible, permitting a wide range of operations. The machine may be arranged with front blocks for diameter turning and rear blocks for shouldering and taper turning, the rear block to come into operation by hand after the diameter turning has been accomplished; or the front blocks may be used for diameter turning and the back arm for shouldering, necking, chamfering or grooving simultaneously with the turning of the front tools. In another arrangement the auxiliary blocks can be introduced at the rear, hand operated, for shaving the radius at the end of the cylindrical turning or chamfering of corners.

On a machine for turning shafts up to 2½ in. in diameter and having a 9-ft. bed, the distance between centers is 72 in., and the overall dimensions 10 ft. by 40½ in.

The theory of rolling mills, with recent developments in the industry, was discussed by Prof. W. Trinks of the Carnegie Institute of Technology, Pittsburgh, at a meeting of the Buffalo section of the American Society of Mechanical Engineers on the evening of Feb. 1 at the Iroquois Hotel, Buffalo.

J. D. Martin, chief engineer, Hillman Coal & Coke Co., Pittsburgh, and retiring chairman of the mining section, Engineers' Society of Western Pennsylvania, spoke on "Standardization of Mine Turnouts," at the annual meeting of the section at the William Penn Hotel, Pittsburgh, Tuesday evening, Jan. 31.

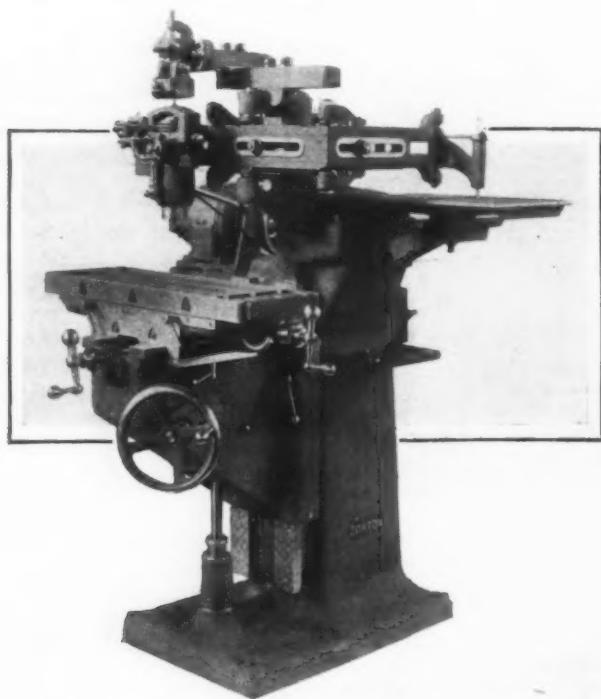
George Berry, chief chemist Halcomb Steel Co., Syracuse, N. Y., addressed the Rochester Chapter of the American Society for Steel Treating on "From Ore to Steel" at the regular January meeting, on the evening of Jan. 11.

### New Heavy Engraving Machine

A heavy engraving machine, designated the No. 1-S, for cutting dies, steel stamps, large-size letters and similar work in steel, brass and cast iron, has been added to the line of the George Gorton Machine Co., Racine, Wis. The new machine is heavier and of greater capacity than the company's previous machines.

As an example of the capacity in cutting heavy lettering, a sunk letter 1½ in. high, ¼, 5/16 or ¾ in. depth of cut can be made in cast iron in 2 min. with a single cut. In cold-rolled steel a letter 2 in. high, 9/64 in. depth, is cut in relief in 15 min., with two cuts and in bronze a 2-in. letter, 5/16 in. depth, is done in 2 min. with one cut.

The pantograph is adjustable and has a range of 1 to 1 down to 6 to 1 in reductions. The pivot bearings are ball bearing, both radial and thrust, all other pantograph bearings being formed by hardened, ground and



When Engraving Work of Curved or Irregular Contour, a Forming Attachment Having Six Adjustments Is Used

lapped cone point centers, male and female. The tracing style is held in a ½-in. collet and the adjustable scales are mounted on top surfaces of bars. The scales have engraved figures, giving the settings for various reductions, and are graduated full length, 20 graduations to the inch, so that any intermediate reduction can easily be obtained. For larger work, the same machine can be equipped with a larger pantograph having reductions 2 to 1 down to 8 to 1.

The cutterhead is an integral part of the heavier of the pantograph bars. The spindle is 13/16 in. diameter, is mounted on ball bearings and has a range of 1800 to 8000 r.p.m., enabling very small cutters to be used for fine work and finishing up corners. Spindle speeds down to 600 r.p.m. are obtainable by using special drive pulleys. The spindle nose has a straight hole ⅝ in. in diameter with a collet nut for holding the cutters. Extra bushings to take drill rod cutters from ¼ in. diameter down can be obtained and a heavy spindle running in bronze bearings and at slower speeds can be furnished.

When engraving work of curved or irregular contour, the forming attachment having six different adjustments is used. This can be set quickly and accurately in relation to the work to be engraved. The lower member of the attachment is directly over the center of the spindle, and carries the former block, which is a hardened piece of steel of the same shape as the engraved surface, except in reverse. This controls vertical movement of spindle. The copy holder is mounted on a bracket at right-hand side of machine

and is adjustable to compensate for change in reduction of the pantograph.

The longitudinal feed of the table is 17¼ in. and the cross feed 8¼ in. The minimum distance from end of spindle to top of table is ½ in., the maximum being 16 in. The belt-driven machine weighs approximately 1800 lb. and the motor driven, 1950 lb.

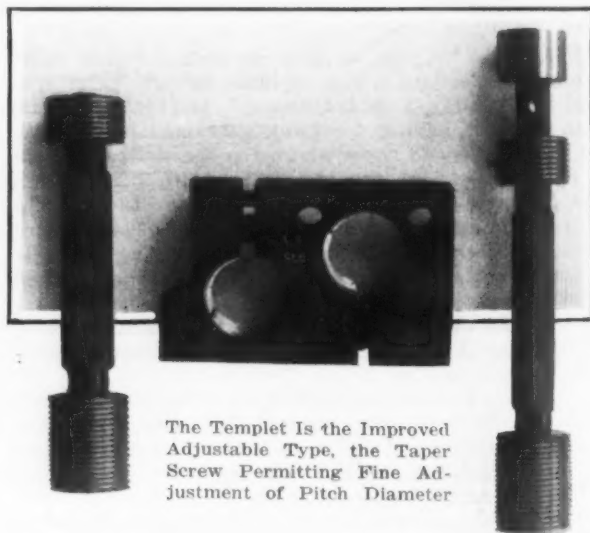
### Cast Iron Carwheels Made Centrifugally

The casting of iron car wheels by the centrifugal process is reported as under way by a large British pig iron maker, which is negotiating with a British foundry for the purpose of organizing a company to develop this process, says *Foundry*. The wheels are to be made in a machine with a vertical axis and will be cast with chilled iron on the rim and a softer, more ductile metal for the center. This is regarded as likely to awaken considerable interest, as it is stated that the cast iron car wheel is practically unknown in England. The new organization is reported to have the benefit of considerable experience in centrifugal casting and it expects to produce large castings centrifugally in other lines in addition to its work in the railroad field.

### New Spark Plug Gages

A new set of spark plug thread gages made to S.A.E. standard limits has been placed on the market by the Pratt & Whitney Co., Hartford. The set consists of a double-end limit plug gage of the Trilock reversible-end type, a "go" and "no go" templet in one unit and a setting plug for the templet, consisting of two threaded members and one cylindrical plug for checking root diameter.

The pitch diameters of the plugs are 0.841 in. and 0.843 in., the tolerance for tapped holes being 0.002 in.



The Templet Is the Improved Adjustable Type, the Taper Screw Permitting Fine Adjustment of Pitch Diameter

The templet pitch diameters are 0.836 in. and 0.839 in., giving 0.003 in. tolerance on spark-plug body threads, and a neutral zone of 0.002 in. between maximum plug and minimum hole.

The templet is shown in the accompanying illustration and is of the improved adjustable type, the taper screw permitting fine adjustment of pitch diameter. When both locking and adjusting screws are tight the threads of the adjusting screw are said to form a perfect dowel in both planes. The go and no go ends are placed close together, for convenience in spinning onto work. The go side of the templet is cut away for quick identification when using the gage for rapid inspection. The reversible plug ends are intended to provide double the usual wearing surface.

An additional open hearth furnace of the Steelton, Pa., plant of the Bethlehem Steel Co. is being fired, preparatory to the early resumption of operations. Five of the nine furnaces of the plant will then be in use.



## INCORPORATION OF UNIONS

### Two Reports of Private Investigators—Senator Kenyon Does Not Agree with Colleagues

WASHINGTON, Jan. 31.—Legislation making it compulsory for labor unions to incorporate is recommended in one report, and a Federal agency for regulation of the coal industry is recommended in another, made to the Senate last Friday by the Committee on Education and Labor in connection with its investigation of disorders in the West Virginia-Kentucky coal fields.

The recommendation for incorporation of unions, which frequently has been made in the past, and always vigorously combatted by the American Federation of Labor, was made in a report signed by Senators Phipps, of Colorado; Warren, of Wyoming; and Sterling, of South Dakota, all of whom are Republicans. The setting up of a code to regulate the coal industry was recommended by Senator Kenyon, of Iowa, Progressive Republican and chairman of the committee. His proposal was supported by the other three senators, but they maintained that such a code would be impracticable unless incorporation of labor unions were required so that they would be legally responsible in their dealings with the coal operators.

In his report, Senator Kenyon said that mutual concessions must be made by both operators and miners to any conflict, but the other Senators hold that the law should provide that when agreements were reached, through arbitration or otherwise, the promises made must be respected.

In their report, the three Senators said that "As a matter of fact when conditions made it safe to do so, when wages soared and when men were highly needed, these contracts were broken by the employees and there was no redress. At the same time the operators were liable for the full performance of their contracts to deliver specified quantities of coal at prices at which they had been sold."

The position of Senators Phipps, Warren and Sterling, who also differed with Senator Kenyon as to the responsibility for conditions in the West Virginia mining district, is that it should not be necessary to compel incorporation of labor organizations. Their report declared that no valid reason existed for their failure to incorporate and pointed out that such action would benefit the labor unions themselves because it would compel an accounting of funds through annual reports to all members of the organization.

It was declared, that under the present methods of handling funds of labor organizations, the great body of union men never know what becomes of the dues which they pay into the general treasury. The three Senators also said that paid organizers had gone into the West Virginia district from other States and had resorted to intimidation and violence in an effort to force unionizing the miners as a body. On the other hand, Senator Kenyon charged that both miners and operators were "measurably responsible."

Further, it was the opinion of the three Senators that "too much stress has been laid upon the point where operators were to blame and not enough is said about the crimes, including murder, of which the employees were guilty."

The proposed code to regulate the coal industry, for which Senator Kenyon announced he would introduce a bill, would create a Government coal board similar to the Railroad Labor Board. It would consist of three representatives each of the employees, employers, and the public, appointed by the President. The industrial code principles would be interpreted by the board. The proposed code is largely similar to one that has been previously outlined in a bill introduced by Senator Kenyon. Some of the high lights of the proposed bill of Senator Kenyon are: "Right of operators and miners to organize is recognized and is not to be interfered with in any manner; the right of collective bargaining through representatives of operators and miners of their own choosing is recognized; non-union miners have the right to work without being harassed by fellow workmen who may belong to unions; and union

miners have the right to work without being harassed by operators who do not believe in unionism; common laborers have the right to earn an adequate living wage; six days of eight hours each would be the recognized working standard; punitive overtime would be paid for hours worked each day in excess of the standard working day; when a dispute or controversy arises, there should be no strike or lockout, pending a conference or a hearing and determination of the facts and principles involved.

Senator Kenyon maintains that the Kansas Industrial Court idea involving compulsory arbitration, has proved futile. He considers that the topic of regulation of the coal industry and the setting up of a labor code is both timely and pressing at this period, because of the threatened strike of bituminous coal miners on April 1.

### To Reduce Eye Hazard

HARRISBURG, PA., Jan. 30.—Of interest to the iron and steel trade generally are the plans of the Pennsylvania Department of Labor and Industry to remove, or decrease, the eye hazard in industry in the State. Definite steps of the year's program were announced this week by Commissioner Clifford B. Connelley, who asserted that there has been an alarming increase in the hazard in Pennsylvania and throughout the nation generally.

The Industrial Board of the department, after more than two years' of study of conditions causing eye losses, has completed a revision of safety standards governing head and eye protection in Pennsylvania. This head and eye code was recently completed and adopted by the board after one year of public hearings and revision, and is now printed for distribution. The Division of Hygiene and Engineering performed an exhaustive investigation and prepared recommendations which it submitted to the board in July, 1920, on the eye hazard.

Seven separate occupations, wherein protectors are required, are enumerated in the new code. They are:

1. Oxy-acetylene and other compressed gas welding and burning.
2. Chipping.
3. Electric arc welding.
4. Grinding—wheel dressing and rough emery.
5. Iron tapping at cupola.
6. Sand and shot blasting.
7. Thermit welding.

Goggles, masks, helmets, hoods and shields are recommended as protectors for certain lines of work. In every one of the mandatory occupations, with the exception of sand and shot blasting, goggles are required. In sand and shot blasting a hood is required.

Recognition of the element of negligence in the enforcement of this code has resulted in the injection of strong language for the purpose of bringing home to the workers and employers the danger in eye accidents. The fact that eye cases number more than all other permanent injuries combined, for which compensation is paid, brings home a lesson to the responsible parties, Commissioner Connelley emphasized. Another lesson which confronts the workers particularly is found in the fact that eye losses are permanent in the sense that such cases almost preclude rehabilitation in any form.

### Safety Movement at Youngstown

The Youngstown Sheet & Tube Co., Youngstown, Ohio, is instituting a safety drive at its various plants in order to reduce the number of accidents in 1922. A special appeal has been issued to the newly elected representatives of employees in the Representation Plan to aid the movement, that the record for 1922 will be the best ever.

Pointing out the cost of accidents to the company, James M. Woltz, general safety director, states that "when an employee is injured and required to be off work, the company loses an experienced workman. A man with less experience takes that job and we have a reduction in production on this particular machine. The quality of the work is not as good; the slowing

down of initial production may, and oftentimes does, cause a slowing down all along the line to the finished product, and sometimes even to the shipping.

"The work of the medical department, compensation department, safety department and other correlated departments or bureaus is increased, and this means spending additional money.

"A new man is taken into our organization to replace the man who was injured. It costs money (from \$35 to \$500 is the estimate, depending upon the work, etc.) to hire, examine, instruct and supervise this new man, and there is a lot of his product at first that is only good for scrap, and this is a heavy loss. His output is limited and not up to the standard."

### Labor Conditions at St. Louis

ST. LOUIS, Jan. 31.—The labor situation in the Eighth Federal Reserve District is reflected in a statement compiled by the Federal Reserve Bank of the district from reports received from 210 leading employers in 21 of the largest cities of the district showing that the number of employees of the reporting interests decreased 8887 or 5.1 per cent (men decreased 8.3 per cent while women increased 35.4 per cent) between Dec. 31, 1920, and Dec. 31, 1921. On Dec. 31, 1920, the number was 10.9 per cent under normal and on Nov. 30, 1920, the total was 11.8 per cent under normal. Wages, figured on a semi-monthly basis, decreased \$3,025,452.32 or 20.7 per cent between Dec. 31, 1920, and Dec. 31, 1921.

On July 1, 1921, the total wage earners was 27.4 per cent under normal, on Aug. 1, 1921, 23.1 per cent under normal, on Sept. 1, 1921, 16.4 per cent under normal, on Oct. 1, 1921, 17.7 per cent under normal, and on Nov. 1, 1921, 17.1 per cent under normal.

### Newport Rolling Mill Co. Reincorporates

The Newport Rolling Mill Co., Newport, Ky., has decided to surrender its Kentucky charter and to reincorporate under the laws of the State of Delaware. This move is being made for the purpose of making the company an interstate corporation, giving it an opportunity to seek redress in United States courts if any person or persons interfere with the conduct of its affairs. The decision of the company was made as a result of the strike now in progress at its plant, and the difficulty encountered by the company in securing adequate protection for its employees. The Kentucky State troops which have been stationed at the plant for the past five weeks, were moved away on Jan. 28, and Newport city officials were commissioned to maintain order at the plant. There have been several instances of employees being attacked even when the troops were on guard, and fears are entertained that civic officials may not be able to control the situation.

### Working Rules Rejected

CHICAGO, Jan. 28.—Rejection of the new rules covering working conditions in railroad shops recently announced by the United States Railroad Labor Board, has been ordered by a committee of 100 acting for the six railroad shop crafts. In a circular issued to the shop men in this country, the committee has ordered new disputes instituted with the railroad management immediately to the end that the rules again be amended and, failing to reach an agreement, the disputes are ordered taken to the Labor Board for hearing. The circular is signed by the international presidents of the six shop crafts unions.

The General Electric Co., West Lynn, Mass., is employing 7500 to 8000, as against a normal personnel of 11,000 to 12,000. Incoming business shows a slight improvement, and the outlook is brighter than it has been before in some time.

Eight hundred employees of the Readville car shops, New York, New Haven & Hartford Railroad, Readville, Mass., laid off a month ago, have been called back to work without change in wages. Returning employees include machinists and blacksmiths.

## REFRACTORIES LITTLE CHANGED

### Demand Comes From Many Industries But Is Limited in Volume

PITTSBURGH, Jan. 30.—The situation in refractories does not change much. Demand is anything but brisk, and yet there is some buying by practically all consuming industries, and to be doing some business at a time when the iron and steel industry, the chief outlet for refractories, is running at such a moderate rate as at present, is an occasion for some satisfaction. This feeling, however, does not extend beyond the fairly diversified character of the buying, for prices generally either show a loss or mean only a new dollar for an old one. An effort is being made to maintain present prices, chiefly on the argument that they are as low as they should be on the basis of current costs. This plea, however, does not carry much weight with the iron and steel producers, whose experience for some time has been that what buyers are willing to pay rather than producing costs determines the selling prices.

Large makers of fireclay brick are holding high duty grade at \$32 per 1000 as a minimum, but instances still are heard of business being accepted by smaller producers at \$30 in all districts, except possibly Kentucky. There does not seem to be any shading of the recently established minimum of \$30 per 1000 for Pennsylvania silica brick, but there is scarcely enough business to provide a real test of that figure, and in the Chicago district the going price is not more than \$35.

An interesting development in connection with magnesite brick prices is that since Eastern makers now are entirely on Austrian magnesite, the prices of the larger producing interests are f.o.b. Baltimore, that port having been set up as a basing point. The freight from Baltimore to Pittsburgh common freight points is \$4.70 per net ton and to Youngstown district points \$5.60. Chrome brick still is weak, with most sales at or near \$41 per net ton, f.o.b. works.

We quote per 1000 f.o.b. works:

Fire Clay:	High Duty	Moderate Duty
Pennsylvania .....	\$32.00 to \$35.00	\$30.00 to \$32.00
Ohio .....	30.00 to 35.00	28.00 to 30.00
Kentucky .....	32.00 to 35.00	30.00 to 32.00
Illinois .....	32.00 to 35.00	30.00 to 32.00
Missouri .....	32.00 to 35.00	28.00 to 32.00
Silica Brick:		
Pennsylvania .....		30.00
Chicago .....		35.00 to 37.00
Birmingham .....		40.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore) .....		53.00
Chrome Brick:		
Standard size, per net ton .....		41.00 to 43.00

### Building 2 1/4 Years Behind Demand

Col. Leonard P. Ayres, vice-president Cleveland Trust Co. and formerly chief statistical officer of the A. E. F., speaking at the annual convention of the Associated General Contractors of America, in Cleveland, last week, expressed the belief that prices will continue to fall, intermittently, for ten or twenty years more, but conveyed assurance that the construction industry will be immune to many of the embarrassments of the coming period, because it supplies a market in which there is a latent demand equal to 2 1/4 years of normal production of buildings.

"In other words," said Col. Ayres, "construction can go along for nine years at 25 per cent above normal, and only fill the normal demand by the end of that time."

The Ajax Electrothermic Corporation, Trenton, N. J., has sold to the U. S. Molybdenum Metals, Ltd., Los Angeles, Cal., a high-frequency converter of 25 k.v.a. capacity, together with three Ajax-Northrup high-frequency induction furnaces. They are to be used for the reduction of molybdeniferous, tantaliferous and tungstic ores at the mines. The company has also sold to the Welsbach Co., Gloucester, N. J., a 25-k.v.a. Ajax-Northrup high-frequency converter and a special furnace for attaining a temperature of about 1600 deg. C. (2912 deg. Fahr.).



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ESTABLISHED 1855

# THE IRON AGE

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## Heaping Up Labor Antagonism

At Washington the other day Samuel Gompers warned the members of the Agricultural conference that those of them who favored the repeal of the Adamson law were playing into the hands of the bankers, implement manufacturers and their like. He said that he had "faced the same stereotyped antagonism to labor" in the Unemployment conference last fall. While the Agricultural conference did not vote for the repeal of the Adamson law, it did call for participation by railroad labor and railroad corporations in the general price deflation now under way. Mr. Gompers was not pleased with this position respecting railroad labor. His attitude on all proposals for wage reductions is what it was just after the war, when he served notice that organized labor was going to hold everything that it had gained in war time. Of course, organized labor has not been able to hold wages up to the war level, and all the king's horses and all the king's men could not avert the deflation that has been under way. It is not the advocates of necessary wage reductions who are working against labor, but those leaders who insist on keeping wages so high that factories cannot run, since the market will not pay their price.

As has been said over and over, it is not the holding of a high wage rate the worker wants, so much as the maintenance of his purchasing power at the highest possible point. What will it profit a man in the common labor category to have a \$5 daily wage rate and get but one or two days' work a week? It is the amount in the pay envelope that counts, and what it will buy. The coal miners, who share Mr. Gompers's unwisdom, think the remedy for their small weekly earnings is to raise the rate still higher. It is perfectly plain to the average intelligence that excessive wage rates are responsible for very much of the inactivity at industrial plants in the United States, high railroad labor being responsible more than anything else. The farmers have had deflation in excess. High transportation rates have done them more hurt than any other one thing. Naturally they ask to have transportation rates reduced and they recognize that this must come about through a reduction of railroad wages.

Mr. Gompers's sulphurous language is familiar, but we can only wonder that he goes on year after year discussing labor and economic questions as though all who disagreed with him were enemies. He never gets over the language of militarism. To the farmers at Washington he said that if they adopted the report of the committee which recommended the repeal of the Adamson law, "we cannot help but feel you are aligning yourselves with our enemies." We could understand such language if it came from an advocate of the abolition of the "capitalistic system" root and branch. But Mr. Gompers has been a stout opponent of the soviet and all that ilk. Yet he has steadily urged the essential antagonism of employer and employee and opposed any plan that would bring about direct contacts between employers and their employees in friendly conference. Nothing has been more heartening to the friends of better industrial relations than the progress made in recent years with plans of employee representation that have aimed at the settlement of disputes on a basis of fairness and justice rather than by the argument of superior force. In all these the aim has been to bring into industrial relations the spirit of the international conference that is now so successfully ending its labors at Washington.

To the carrying over into industry of any such program of peace and conciliation the American Federation of Labor is opposed with all its might. The greatest military machine in the labor world was built for war and its perpetuation requires a continuing state of war and the constant preaching of enmity and antagonism.

The low rate of American blast furnace operation in 1921 naturally has been reflected in the iron ore imports. To Dec. 1, 1921, these had fallen to the lowest figure in many years, or 28,510 gross tons per month against 216,231 tons per month in 1913. A feature of last year's imports was the large proportion from Sweden. To Dec. 1, 42 per cent of the total imports, or 11,894 tons per month, came from Sweden, as against only about 14 per cent in 1913, when the volume both from Sweden and other countries was much larger.



Spain's proportion fell to very small figures last year. There is no doubt, however, that imports from Sweden and other countries will expand rapidly as blast furnace operations increase, because foreign ore can be laid down along the seaboard at a lower cost than Lake Superior ores, and compete in quality as well.

### More Steel in 1922 Than in 1921

It is a common expectation that steel production in 1922 will exceed that of 1921. The history of reactions in the industry is one of rebound in the year following a low dip. If one takes for study the half century 1864 to 1913 inclusive he cuts out the recent war but takes into the reckoning the Civil War boom in production, with the recession that would follow if war necessarily involves a recession afterward. In those 50 years there were 31 which made new high records in pig iron production and only 19 that failed to do so. Thus the proportion of record-breakers was better than six in ten. The longest spell without a new record was five years, 1874 to 1878, the next longest being the four years 1891 to 1894, next coming the three years 1883 to 1885.

The greatest recessions in pig iron production were in 1876 and in 1894, when output was 27 per cent below the previous high mark for a year, and in 1908, when there was a recession of 38 per cent. In 1921, on the other hand, the recession was 58 per cent from the record of 1916. In the year after 1876 there was a gain of 11 per cent, while after 1894 there was a gain of 42 per cent and the making of a new record and after 1908 there was a gain of 55 per cent and a new record.

This is speaking merely by the statistics. The years 1876 and 1894 had practically nothing in common with 1908 from the economic viewpoint. They were years of industrial depression in which demand for iron and steel increased despite the depression, while 1908 was simply a year in which the country liquidated its stocks and made a fresh start, for 1909 broke the previous production record by a small margin, and then 1910 beat 1909 by 6 per cent.

One can argue that there should be a much greater demand upon the iron and steel industry this year than last without contending that history must repeat itself in full, without refusing to admit that the war must exert an important influence. Pig iron could gain 54 per cent over 1921 and still have 54 per cent to go above that tonnage to equal the previous record, while steel ingots could gain one-half and still have to gain one-half of that to equal the war-time record of output.

Merely a duplication in 1922 of the actual ultimate consumption of 1921 would require an increased production at mills and furnaces, for there is no denying that stocks of steel in the hands of buyers and stocks of manufactured goods in the hands of various holders were much smaller at the end of 1921 than at the beginning. That is not because stocks at the beginning of 1921 were phenomenally large, but because stocks at the end of the year were practically nothing. The same consumption this year as last would mean

larger production, restoration of normal stocks would mean still larger production, and a moderate increase in consumption would mean additional production on top of that.

So great was the slump in steel production in 1921 that one can throw out of the reckoning the war production and take it that a steel production in 1922 of 25 per cent less than production in 1912 and 1913 would still be 16 per cent more than production in 1921, thus allowing for a recession of 25 per cent in consumption in ten years instead of counting upon any increase at all. Thus the most moderate—even pessimistic—appraisal of prospects must show that the iron and steel industry has left its worst year behind.

### Volume of Steel-Using Business

The great difference between the volume of general business in the United States and the character of the business, from the standpoint of steel manufacturers, needs always to be borne in mind. What the steel industry is actually thinking of, when it speaks of the volume of general business, is not really general business at all, but rather the particular kind of business that makes for steel demand, the kind of business that represents construction, expansion and improvement.

As to the actual amount of business done, the business that involves a money turnover, there is no better index than the "bank debits" reported by the Federal Reserve Board. These represent the total of debits to individual accounts at banks in about 150 leading clearing house centers. The figures are better than statistics of clearing house operations for various reasons, one being that they include checks deposited at the banks on which they are drawn. These bank debits are reported weekly, and are now available in monthly totals for the past three years, as follows:

Bank Debits, Millions of Dollars			
	1919	1920	1921
January .....	34,438	44,727	37,560
February .....	27,883	35,281	29,358
March .....	31,725	42,835	33,487
April .....	32,270	41,056	31,812
May .....	36,555	38,695	32,110
June .....	38,676	39,778	38,172
July .....	40,490	39,299	31,088
August .....	37,458	35,783	29,179
September .....	38,089	36,862	31,325
October .....	43,880	40,207	33,853
November .....	41,969	39,265	32,997
December .....	45,916	42,400	37,542
Year .....	449,349	476,188	393,923

There are represented in these bank debits nearly all business, commercial and industrial transactions, including sales of real estate, sales of commodities at wholesale and retail, services rendered for salary or wages, bond and stock transfers, interest and dividends paid, etc.

Comparing the year totals, 1920 is only 6 per cent above 1919 and only 21 per cent above 1921. In some minds the reaction to this showing may be simply that here are some statistics that need to be explained away, but it is more practical to recognize the value of these statistics and form a viewpoint in accordance with them.

The Bureau of Labor's index number of com-

modity prices at wholesale was higher for 1920 than for 1919 by 15 per cent, and higher for 1920 than for 1921 by 57 per cent. Wages and salaries were higher in 1920 than in 1919 and much higher than in 1921. Payments to and by the railroads were higher in 1920. Dividend disbursements were much higher. Practically all the important things that can be reckoned in dollars in proportion to the physical volume of business done or service rendered were higher in 1920 than in 1919 or 1921 by greater margins than are shown by the bank debits. The conclusion is that the physical volume of business was less in 1920 than in 1919 and probably less than in 1921.

This fact is not something to be explained away but something to be used to enable one to obtain a clearer viewpoint. From the steel maker's standpoint it is not so much a question of how much money is changing hands, how much "business" of a sort is being done, but whether the business or activity is of the nature to produce steel demand. The activity of 1920 produced a large steel demand, yet there must have been involved a relatively light turnover of some commodities that were very high priced and were assumed, merely on that account, to be in large demand. Some of these commodities were held at high prices in 1920 and did not sell, while in 1921 they were offered at lower prices and did sell. The country did not stand still in 1921, but transacted a great deal of business, of a sort, and while it called for little steel during the year it probably wore out a great deal of steel in its activity, and it has been going at an ever increasing pace since last August, auguring an eventual increase in the demand for steel.

### Trade Information for All

At a recent meeting of members of the National Conference of Business Paper Editors and representatives of the Chamber of Commerce of the United States in Washington, the decision of the Supreme Court in the so-called Hardwood Lumber case was discussed at length. The prevailing opinion was in harmony with that expressed in these columns shortly after the decision was handed down, especially as to the ability of trade organizations to carry on statistical work, when it is not in any way intended to use it to boost prices, and also in the opinion that it will now be necessary to depend, to a greater extent than ever, upon trade paper publications.

In the case of the Hardwood Manufacturers' Association, the statistics as to prices and production, in the opinion of the court, were used to establish higher prices and to monopolize the market. The statistics were not sent to buyers and sellers but only to members of the association. If, however, the information as to prices and production is made open to all, as in the case of publication in trade papers, it is difficult to see how there could be any more objection to it than to the market reports already published.

There has been some disappointment because the much-talked-of statement in regard to the situation created by the Supreme Court decision has not been issued by the Department of Justice. It

has been an open secret, however, that Cabinet officials were not unanimous in their views as to the decision. Moreover, the Attorney-General, perhaps naturally, hesitated about issuing an explanation of the Supreme Court decision. Pronouncements of the highest court in the land are supposed to speak for themselves, and the Attorney-General is not expected, ordinarily, to attempt to clarify the language. If, however, agreement could be reached and a statement issued removing some of the uncertainty that now troubles many associations which do not know whether they are acting legally or not, it would be well for all concerned.

### A Contrast in Steel Exports

The recent changes in the positions of the leading countries in respect to steel exports are worth noting. Data for the last half of 1921 show that countries which were in the front rank in 1920 have been passed by others from which not so much was expected. The following table compares the last half of 1921 with other years, the figures representing monthly averages in tons:

	Last Half of 1921	1920	1919	1913
Germany .....	225,584*	145,883	10,300	479,800
Great Britain .....	144,192*	271,000	186,100	411,100
France .....	127,100†	74,600	19,400	48,200
United States .....	103,467	392,400	362,100	241,000

\*December estimated.

†Third quarter only.

From a position of leadership in 1920, the United States has dropped to the foot of the list, with only 27 per cent of its 1920 exports and less than 45 per cent of the 1913 movement. Germany has advanced to first place, showing a striking recovery in two years. In the last two or three months of 1921 Germany's exports were about 50 per cent of those for 1913. Great Britain is rapidly regaining her overseas trade, while France has taken a position by no means insignificant.

The export position of the United States may not be better than third in the list in 1922. High transportation and high fuel costs are retarding factors at home, and adverse exchange will be a continuing influence. In Great Britain liquidation in prices and labor has been more rapid recently. France and Germany are hard at work and labor and materials are cheap. Germany's disarmament will work steadily in her favor, as will every step toward stability in eastern Europe, where much German steel at length will come into use. The Orient, South America, South Africa and Australia will be the chief outlets for American steel, apart from the steady stream flowing in upon our neighbor on the north.

In a plant of the Detroit Edison Co. has just been completed the largest boiler in the world. It is rated at 2982 hp., and can convert each hour 24,000 gal. of water into 200,000 lb. of steam. The boiler was made by the D. Connelly Co., Cleveland. The four upper drums are 44 in. diameter and the two mud drums 48 in.; there are 2184 tubes. The combustion chamber volume, from the tubes to the top of the stoker tuyeres, is 11,440 cu. ft. The stoker, of the Taylor three-plunger type, with 14 retorts on each side of the boiler, has a total fuel-burning capacity of 33,600 to 39,200 lb. of coal per hour.



## CORRESPONDENCE

## Tests of Rotary Drill Pipe

To the Editor: In THE IRON AGE of Sept. 29, 1921, there was an article on "Tests of Rotary Drill Pipe" which I had written with the object of calling attention to the fact that nearly all of the specimens failed in tension by jumping out of the coupling rather than by breaking the pipe. For the sake of brevity, a full description of the tests was omitted and emphasis was placed on the manner of failure. It seems, however, that the apparent lack of uniformity of the maximum load in these published results for iron pipe has led to considerable adverse criticism of iron pipe for oil well use. The purpose of these tests of casings was to determine the strength or efficiency of the joint under particular threading conditions or with predetermined looseness of the joint in screwing up. In order that no injustice be done this industry, I am asking that you publish the following more detailed table of the results of these tests:

Results of Tensile Tests of Oil Well Casings  
(First eight items are iron pipe; last item, steel.)

Weight Per Ft. Lb.	Threads Per In.	Thread Bearing in C'pl'g, In.	Tightness of Joint	Max. Load, Lb.
17	11 1/2	2	Mill tight	168,400*
17	11 1/2	1 1/2	Mill tight	153,400*
17	11 1/2	2	2 thds. loose	137,760*
17	11 1/2	2	4 thds. loose	126,000*
40	10	2 1/2	Mill tight	314,000*
40	10	2 1/2	2 thds. loose	217,300*
40	10	2 1/2	3 1/2 thds. loose	194,000*
40	10	3	Mill tight	265,860*
40	10	2	Mill tight	387,800†

\*Coupling pulled off the pipe.

†Pipe broke just within the lower coupling.

A. H. STANG,

Associate physicist, Bureau of Standards,  
Pittsburgh Branch, Department of Commerce.

## Steel Corporation New Construction

The statement has been published recently in various quarters that the National Tube Co. would build an extensive plant at Gary, Ind. This is not a new project. The United States Steel Corporation announced some years ago that its tube subsidiary would build a complete plant, including blast furnaces, at Gary. From 1917 to 1920, at the beginning of each year, in connection with the Steel Corporation's program of new construction, the following item appeared: "Gary Tube Plant—Self-contained tube plant, including four blast furnaces." The statement of Jan. 1, 1920, was the last in which this item had a place. It has been the understanding, however, that the Steel Corporation has not given up the project. The announcement that it has again become active would not be surprising, as there has been no record of the abandonment of any new construction project the Corporation has once announced.

The Steel Corporation's statement of new construction under way at the beginning of 1922 included a reference to the rod and wire mills and town site extensions, with additional dwellings for employees, at the Duluth works of the Minnesota Steel Co. Work on the rod and wire mills has been actively carried on for some time, and it is probable that these will be put in operation in May.

The Maryland Steel Rolling Co., 1410 Fidelity Building, Baltimore, will commence work immediately on a new plant at Chesapeake and Cleveland Avenues, St. Helena, near Baltimore, manufacturer of steel reinforcing bars and kindred products. The initial building will be 66 x 228 ft., and will be supplemented by other one-story work buildings. The machinery installation will include a traveling crane, and different equipment contracts are being let. R. S. Baldwin is general manager.

## STEEL CORPORATION EARNINGS

## Deficit Again Recorded — Very Poor Showing Made in December

The net earnings of the United States Steel Corporation for the last quarter of 1921 were \$19,612,033 compared with \$18,918,058 in the third quarter. The corporation earned the preferred dividend, but not the common, and it was necessary to take \$5,280,901 from the surplus. The poor record for the past two quarters is still considerably better than that for the last quarter of 1914 when the earnings were only \$10,933,174, the lowest on record. The usual dividend of 1% on preferred and 1% on common were declared. For the year the total net earnings were only \$92,708,827. The deficit for the year is \$14,001,178 after paying dividends. The earnings for the past four years were as follows:

Quarters	1921	1920	1919	1918
First	\$32,286,722	\$42,089,019	\$33,513,384	\$56,961,424
Second	21,892,016	43,155,705	34,331,301	62,557,391
Third	18,918,058	48,051,540	40,177,232	42,961,589
Fourth	19,612,033	43,877,862	35,791,302	36,354,165

Net earnings each year: \$92,708,827 \$177,174,126 \$143,813,219 \$198,834,569

## Earnings

The statement for the quarter ending Dec. 31 shows steady decrease in earnings from October to December. It is as follows:

	Earnings Before Charging Interest on the Subsidiary Companies' Bonds Outstanding	Less: Interest on the Subsidiary Companies' Bonds Outstanding	Balance of Earnings
October, 1921....	\$8,864,873	\$660,515	\$8,204,358
November, 1921..	7,100,727	660,289	6,440,438
December, 1921..	5,633,521	666,284	4,967,237
	\$21,599,121	\$1,987,088	
Net earnings .....			\$19,612,033
Less charges and allowances for depreciation and sinking funds on U. S. Steel Corporation bonds .....			8,290,021
Net income .....			\$11,322,012
Deduct: Interest for the quarter on U. S. Steel Corporation bonds out- standing .....		\$4,878,304	
Premium on bonds redeemed.....		147,462	
			5,025,766
Balance .....			\$6,296,246
Add, net balance of sundry charges and receipts			1,081,555
Total .....			\$7,377,801
Dividends on stocks of the United States Steel Corporation, viz.:			
Preferred, 1% per cent.....		\$6,304,920	
Common, 1% per cent.....		6,353,782	
			12,658,702
Deficit .....			\$5,280,901

## C. A. Orr Appointed Receiver of Cromwell Steel Co.

The Cromwell Steel Co., Cleveland, with a plant at Lorain, Ohio, has been placed in the hands of a receiver on the petition of the Guardian Savings & Trust Co., Cleveland. C. A. Orr, vice-president and general manager of the steel company, was named as the receiver. His office is at 1539 Guardian Building. The obligations of the Cromwell company include \$2,000,000 in bonds on which interest has been defaulted and approximately \$1,000,000 in notes and accounts. About \$1,250,000 in bonds, stocks and other claims have been deposited with the Guardian Bank under the terms of a recent adjustment agreement.

The plants of the New London Ship & Engine Co., at New London, Conn., are starting up again, having received a good sized order recently which will keep a part of the plant in work for over a year. Additional men are added to the force each week.

Work has been started on the Ford electric plant at Flat Rock, Mich., below Detroit. The contractors have started blasting out a spillway 5 ft. deep and one-half mile long at the bottom of the Huron River bed.

### Taper Pin Reamer

A line of taper pin reamers under the name of Cutwell has been placed on the market by the Bickford-Switzer Co., Greenfield, Mass. The reamer has three right-hand spiral flutes, the cutting lands are rugged and the hook or undercut generous.

The reamer is sharpened so that two of the lands are relieved up to the cutting edge. The third land is relieved for only about two-thirds of its width, the balance being a circular section which acts to steady the tool and prevent the right-hand spiral and undercut from drawing the tool into the work.

It is claimed that this reamer will not grab or draw into the work, that it cannot chatter and that it cuts like a drill and works best when used by power. The

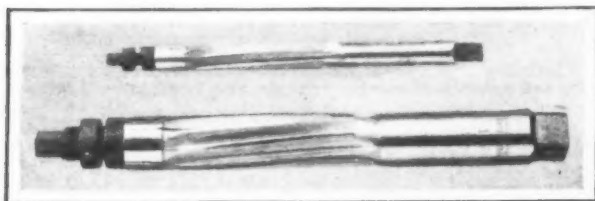


New Taper Pin Reamer

same design has been applied to a chucking or hand reamer for parallel holes. In this case there are three equally spaced and fully relieved cutting lands, and midway between two of these there is a narrow and unrelieved land which acts to steady the tool and prevent its being drawn into the hole or chattering. It also serves, in connection with one of the cutting edges, to furnish a place to measure the diameter of the reamer.

### Spiral Fluted Expansion Reamer

The Pratt & Whitney Co., Hartford, has added to its line of small tools the spiral-fluted expansion hand reamer shown in the accompanying illustration. The long life of this type of reamer and the adjustable feature that permits covering a range of sizes with one



The Lock Nut Holds the Size and the Safety Stop Prevents Over Expansion

tool are features emphasized. Oversize and undersize holes can be reamed by simple adjustments.

The reamers are made in all the regular sizes. They are equipped with a lock nut to hold the size and a safety stop to prevent over expansion and indicate positively when the maximum limit has been reached.

### Bids on Government Shells

CHICAGO, Jan. 31.—Bids were taken by the Government here to-day on 31,000 tons of shells located at Savanna, Ill.; Columbus, Ohio, and Toledo. Successful bids were as follows: \$11.01 per gross ton f. o. b. Savanna, submitted by the Continental Iron & Steel Co., Chicago and New York; \$13.50 per gross ton f. o. b. Columbus by the Buckeye Steel Castings Co.; \$12.26 per gross ton f. o. b. Toledo, by the Hyman-Michaels Co., Chicago.

The General Electric Co. has developed what is known as an open phase and phase reversal relay designed to prevent polyphase motors from running when a phase of the power circuit opens or reverses, with consequent burnouts or damage to the driven machinery.

A Youngstown district steel interest has purchased upwards of 1,000 tons of heavy melting scrap at \$15.50.

### OPPOSE PITTSBURGH BASE

#### Witnesses Continue Testimony as to Damage But Admit Companies Prosper

MILWAUKEE, Wis., Jan. 31.—Witnesses examined in the basing point case being heard by the Federal Trade Commission Tuesday expressed the opinion that the concerns they represent suffer considerable damage through their inability to compete with rolled steel fabricators in the territory east of Chicago because of the addition of the freight rate from Pittsburgh to Milwaukee on shipments of material, wherever the point of delivery origin. Julius P. Heil, vice-president the Heil Co., testified that frequently he purchased bars from the Bay View mill of the Illinois Steel Co. at Milwaukee, and called for the material with his own trucks, but was charged freight rate from Pittsburgh to Milwaukee. Mr. Heil said with one exception every quotation made him by the Steel Corporation member companies was based on Pittsburgh plus. On May 18, 1920, he said there was an exception to the rule when the Illinois Steel Co. quoted prices on 405 tons of bars and structurals, f.o.b. Milwaukee. Within the week, he said, all concerns save Inland Steel Co. quoted f.o.b. Pittsburgh, Inland quoting for Indiana Harbor. These affected blue annealed sheets, plates, bars and angles.

On Jan. 25, Mr. Heil said, the Wisconsin Steel Co., Chicago, quoted bars and angles at \$1.60, f.o.b. Milwaukee, while the Illinois Steel Co. quoted \$1.50, f.o.b. Pittsburgh, or practically 31.5c. per hundred more than the Wisconsin Steel Co.

J. B. Wheeler, purchasing agent Federal Bridge & Structural Co., Waukesha, was the first witness Tuesday morning, giving testimony involving purchase orders and invoices referred to Monday by President C. J. McIntosh. Henry F. Millmann, purchasing agent Geuder, Paeschke & Frey Co., galvanized utensils, testified it was necessary to absorb freight in selling in Eastern as well as far Western territory in order to compete with Eastern competitors, because of Pittsburgh plus. He said a competitor in Wheeling could sell anywhere in the United States in competition with the Milwaukee company on a cost parity or even an advantage over that, excepting only in Milwaukee, and here the advantage to Geuder, Paeschke & Frey Co. amounts to only 2c. per 100 lb.

On cross examination by the Steel Corporation counsel, witnesses invariably admitted that their concerns had flourished and prospered despite the handicap of Pittsburgh plus, but insisted this system hampered them in expanding trade in competition with Eastern manufacturers. These statements usually were ruled out as speculative statements, however.

(Report of Monday's proceedings will be found on page 361.)

The National Association of Waste Material Dealers, Inc., Times Building, New York, has inaugurated a membership drive for the month of February. Out of a quota of 65 members to be secured throughout the United States an allotment of 10 has been made for New York and vicinity. The secretary of the association is Charles M. Haskins.

The February meeting of the Pittsburgh Chapter of the American Society for Steel Treating on Tuesday evening, Feb. 7, at the Chatham Hotel is designated as a "shop-kink" meeting, at which several speakers will introduce problems for solution which are expected to result in bringing out valuable information.

A meeting will be held in St. Louis, Feb. 21 to 24, inclusive, of the managers of the 37 Better Business Bureaus now operating in 37 of the larger cities of the country. The meeting will devote itself largely to the truth movement in advertising.



# Hearing on Basing Point Case Begins

Examiner of Federal Trade Commission Takes Testimony  
at Milwaukee—Admitted That Conditions  
Are Temporarily Improved

MILWAUKEE, Jan. 30.—The Pittsburgh basing point practice and its alleged discriminatory effect on Western rolled steel consumers was discussed in testimony taken by the Federal Trade Commission in a hearing which opened here to-day. J. W. Bennett, examiner of the commission, presided on the first day of the hearing, which is expected to continue in session during the remainder of the week. Houston Thompson, member of the commission, was expected to arrive on the scene by Tuesday. Following adjournment in Milwaukee, hearings will be held at Minneapolis, Chicago, and other cities. The testimony is being taken in connection with the complaint issued by the commission against the United States Steel Corporation and its subsidiaries for alleged unfair methods of competition in interstate commerce and discrimination in price between purchasers of its products. Acting as counsel for the commission is K. E. Steinhauer, assisted by E. W. Burr and J. A. Simpson. Others present interested in the prosecution of the case are H. G. Pickering, attorney Western Association of Rolled Steel Consumers, and C. L. Hilton, Attorney General, State of Minnesota, and Ralph M. Hoyt, Deputy Attorney General of Wisconsin, who appeared as a result of resolutions passed by their respective legislatures condemning the "Pittsburgh Plus" practice. C. A. Severance, president the American Bar Association, and W. W. Corlett, general solicitor United States Steel Corporation, represented the respondents.

The witnesses who were examined and cross-examined on Monday included Charles A. McIntosh, president Federal Bridge & Structural Co., Waukesha, Wis., H. W. Ladish, president Ladish Drop Forge Co., Cudahy, Wis., and H. E. White, traffic expert Western Association of Rolled Steel Consumers.

## Chicago and Pittsburgh on Parity

Mr. McIntosh testified that his company was engaged in the business of fabricating steel bridges and buildings, with a normal annual capacity of 10,000 to 12,000 tons of steel. He stated that the chief raw materials he used, namely steel plates, structural shapes, and bars, were bought f.o.b. Waukesha, at prices which, until six or eight months ago, were equivalent to the market prices f.o.b. Pittsburgh plus the freight to Waukesha. Of late, however, his company has been purchasing these products at prices which are equivalent to the market price f.o.b. Chicago plus the freight from that city to his plant. The Chicago base prices, he said, are substantially on a parity with the Pittsburgh base prices quoted by Eastern mills. In normal years, he said, the prices quoted by all mills were substantially the same, and he averred that the present existence of a Chicago base was temporary and due to the depressed condition of the market. Under cross-questioning by Mr. Severance, Mr. McIntosh asserted that he did not regard any of the past three years as normal, a pronounced sellers' market having been succeeded by a sharp drop in demand. He stated that with the appearance of a Chicago base his company had competed for business in territory east of his plant, a territory from which it was shut out when the Pittsburgh plus practice was in vogue. He pointed out that while Pittsburgh base prices restricted the operations of his company to the territory west of its plant, Eastern fabricators had no such handicaps, but could bid for work on even terms with competitors not only in the East but in the Western States. Mr. McIntosh admitted that there are numerous fabricating companies in the territory ordinarily served by the Federal Bridge

& Structural Co. and that all of them had developed their business when the Pittsburgh plus practice was in effect.

## Western Fabricators Shut Out

Mr. McIntosh was followed on the stand by Mr. White, whose testimony was offered to show why the Pittsburgh basing point shut Western fabricators out of the markets east of them. The rates on finished steel products such as fabricated steel tanks, machinery, boilers, forgings, etc., he said, were substantially the same as those on the rolled steel. The rate on structural steel, fabricated or unfabricated, from Pittsburgh to Muskegon, Mich., is 39.5c., whereas the rate from Waukesha to that destination is 30.5c. Assuming that both the Waukesha fabricator and his Pittsburgh competitor pay the same price, f.o.b. Pittsburgh, the former is under a handicap of 32.5c. per 100 lb., as he must pay the rate from Pittsburgh of 41.50c. plus the rate of 30.5c. to Muskegon. Mr. White cited numerous other examples of a similar character.

## Temporary Conditions

The second steel consumer to be examined was H. W. Ladish, president Ladish Drop Forge Co., Cudahy, Wis., a suburb of Milwaukee. He asserted that his company produced drop forgings principally for the automobile industry, and had a normal annual capacity of 12,000 to 14,000 tons a year, although in a period of abnormal demand in recent years its output was as high as 27,000 tons, running the plant day and night shifts. The principal market for his product, he asserted, was in the State of Michigan, where when the Pittsburgh plus practice was in vogue, he was at a serious disadvantage in competing with Eastern forge shops. When cross-questioned by Mr. Corlett, as to whether this market situation was not the same when his company started business, he replied that the contrary was the case. The original market of his company, he asserted, was in Milwaukee and the West and it was only when the rapid development of the automobile industry leaped ahead of the forging capacity of the country that his company turned its attention to the automobile forging business. He stated that while recently his company had been able to buy carbon steel f.o.b. Chicago it was still the general practice of alloy steel manufacturers to name prices on a Pittsburgh base. He regarded his present ability to buy carbon steel f.o.b. Chicago, as of temporary duration and intimated that a restoration of the Pittsburgh plus practice would seriously endanger the future of his plant. Such a restoration, in his opinion, will come as a result of revived demand from other sources than the automobile industry. Automobile production has over-expanded in recent years and with a continuation of sharp competition the readoption of the Pittsburgh basing point would shut his company out of its market. It is only natural to assume, he averred, that Eastern competitors will be able to produce substantially as satisfactory forgings as his own plant, and with the advantage of the Pittsburgh basing point practice they would be able to take all the business offered. He also pointed out that his plant was not only handicapped through the payment of fictitious freight from Pittsburgh when the Pittsburgh base was in effect, but also through the payment of freight on steel wasted in the process of manufacture. The Pittsburgh forge plant pays only the freight on its finished forgings, while his plant pays not only the freight on the finished product, but also the freight from Pittsburgh on all of the raw

material, of which from 25 to 30 per cent constitutes waste in the form of flash burnt steel, etc.

#### Contract With Illinois Steel Co.

Mr. Ladish entered as part of his testimony a contract with the Illinois Steel Co. dated May 3, 1920, calling for the delivery of 6000 tons of steel from that time until the close of the year. Mr. Corlett, for the respondents, called attention to the fact that the price quoted was f.o.b. Cudahy, not f.o.b. Pittsburgh, and inquired how the witness arrived at the conclusion that he was buying on a Pittsburgh base.

Mr. Ladish replied that he was able to familiarize himself with the Pittsburgh base market by referring to THE IRON AGE, and other trade papers and also by comparing notes with other steel consumers. In this connection he asserted that the automobile manufacturers had proved of service to him and that on occasion the latter had been able to buy at better advantage because of the quantities they ordered and had permitted his plant to use material they purchased in fashioning their products. Counsel for the commission called attention to the fact that while the price specified in the contract in question was f.o.b. Cudahy, recognition of the Pittsburgh base was given in a clause which protected the mill against advances on freight rates. This clause reads as follows: "The price or prices quoted herein are based upon carload freight rates from Pittsburgh to the place of delivery in effect at the date of this agreement, viz., 29.5c. per 100 lb. In the event of an increase in such freight rates, the amount of such increase shall be added to the price of all materials shipped against this contract during the period in which such increased rate is in effect, and in the event of a decrease in such freight rates, the amount of such decrease shall be deducted from the price of

all material shipped hereunder during the period in which such decreased rate is in effect."

#### Disadvantage of Cudahy

Mr. White followed Mr. Ladish with a presentation of statistics to show the disadvantage of the Cudahy plant in competing with Eastern forge shops under the Pittsburgh basing practice. Assuming that the Ladish plant and Pittsburgh competitors paid the same price f.o.b. Pittsburgh, Mr. White testified as to the material advantage of the latter in shipping to various Michigan points, notwithstanding that the Ladish company shipped in carload lots and the Pittsburgh plants in less than carload lots, the freight rates on which are higher per mile than on carload shipments. In computing these figures Mr. White assumed that the waste at the Ladish plant averaged 30 per cent of the raw material bought. Assuming that Pittsburgh forge plants also shipped in carload lots, Mr. White presented figures to show that the Ladish plant was at a disadvantage everywhere, ranging from 17.5c. at its own doors to \$1.008 in Pittsburgh. He presented similar statistics to show that Cleveland forge shops would have the **advantage at almost as many points of delivery**, including Moline, and the Pacific Coast, the only exceptions mentioned being Milwaukee, where the Ladish plant would have an advantage of 11.5c., Minneapolis, where its advantage would be 6.5c., and Duluth, where it would be 3c. In all cases, these figures are based on the assumption that the freight from Pittsburgh to Cudahy is paid regardless of whether the steel actually is shipped from Pittsburgh or from a more western producing point such as Chicago. In this connection it is to be noted that Mr. Ladish testified that 90 per cent of his steel was normally purchased from the Illinois Steel Co.

## IMPROVING SLOWLY

### Gradual Broadening of Buying at Youngstown—Sheet Prices Firm

YOUNGSTOWN, Jan. 31.—While iron and steel buying shows broadening tendencies, the improvement is below the expectations of Mahoning Valley makers, some of whom do not look for a return to normal conditions in the industry until next fall. In the meanwhile, production schedules are holding at about 40 per cent in finishing lines, varying with different interests. Employment is still substantially below normal and large numbers of men are turned away at the mill gates almost daily. This condition exists despite the fact that the 8-hr. day has been established in the majority of departments of steel plants.

During the first 20 days of January, however, the Erie Railroad moved loaded cars 200 above the average daily movement for the corresponding period in December. Other roads report a proportionate betterment.

The United Engineering & Foundry Co. maintains an average production of but 20 per cent., as compared with an average of 40 per cent. in 1921. "This is painfully low for a virile organization to contemplate," states an official. "It means that only one out of five of our former employees is able to work. But housecleaning has been going on since business fell off; machines have been repaired; costs have been analyzed and cut until, given a reasonable chance, we are in a position to bid successfully for any work offered."

Officials of the Trumbull Steel Co. are somewhat more optimistic over the outlook and say they have two weeks' unfilled tonnage on their books at the current rate of production. Until recently the company operated largely on a week-to-week basis. It has increased its open-hearth operations from four to six furnaces and has enlarged its active tin plate capacity, operating its Liberty plant at Leavittsburg, Trumbull County, in part.

Pig iron is now definitely on an \$18 basis for standard basic. Figures on inquiries for foundry iron continue to be submitted by Valley interests.

#### Sheet Production Sags

Though production in the sheet division of the in-

dustry again sagged this week, producing interests generally say the situation is representative of a gradual improvement. No large business has come out, which accounts, in a measure, it is claimed, for the stability of current quotations. Several 200-ton and 300-ton orders were placed in the district during the week, while the automobile industry is placing tonnage with somewhat more freedom, though still cautiously. The principal independent maker of full finished automobile stock is booked four to five weeks ahead, its product meeting with general acceptance.

In both sheets and pipe, jobbing and warehouse interests are more active in the market than for some time past. Considerable tonnages of merchant pipe have been placed within the past two weeks by jobbers.

That sheet business is not yet sustained, however, is indicated by the fluctuations in operating schedules. Not more than 35 of 113 sheet mills in the Mahoning Valley are rolling this week, as compared with an average of 43 per cent last week, the best record this year. Suspension of the sheet mill department of the Youngstown Sheet & Tube Co., consisting of 15 mills, is largely responsible for the decline.

There has been an appreciable decline in the volume of new lapweld pipe tonnage, with some current production going into stocks. Ten of the Valley's 17 pipe furnaces are fired.

In plates, the situation is temporarily improved due to the placing of some storage tank tonnage within the past week. Additional business from this source is looked for during February. The base price in the Valley continues at 1.50c.

The strip market is likewise an "in-and-out" affair, with cold rolled moving at 3.50c. base, and hot rolled quoted nominally at 2c. Business in hot strip is being booked at concession prices, however, it is generally admitted. Most of the strip business coming through at present is from the automobile industry.

In a general way, the lighter steel products are holding their own in this territory. Independents are expanding their production of tin-plate, but admit that the going quotation of \$4.75 is being shaded in some quarters, especially to large consumers. It is believed this price is a fair appraisal of the market on moderate tonnage. In finished lines, tinplate is making a better showing than any other product.



# American Valuation Has Strong Support

Tariff Conference of National Association of Manufacturers  
Meets at Washington—Charles M. Schwab  
Sends Vigorous Letter

WASHINGTON, Jan. 31.—Early passage of an adequately protective tariff act with the American valuation plan incorporated was vigorously urged at the two-day convention of the National Association of Manufacturers, attended by approximately 450 delegates. Assembling yesterday morning, the convention closed late this afternoon. After lively discussion of the principle of the American valuation plan preparations were made to combat the strong influences against it. A memorial to the President and members of Congress was adopted in favor of quick action on the legislation, and it will be presented in person to-morrow to the majority members of the Senate Committee on Finance by a committee selected for that purpose. Among the members are Dr. John A. Mathews, president Crucible Steel Co. of America, and C. A. Moffett, of the Gulf States Steel Co.

Delegates who called upon senators and representatives this morning reported back to the convention this afternoon that sentiment in Congress is strongly in favor of the American valuation plan, and early passage of a protective tariff, but the charge was made by Charles J. Webb of Philadelphia that the measure is being held up in the Committee on Finance by two senators, and it was urged that something be done to see that the bill, carrying the necessary protection and the American valuation plan, is reported to the Senate and passed at an early date.

Throughout the convention speakers strongly pointed out the desirability of letting all interests of the country know the meaning of American valuation and the necessity of having it enacted into law as a source of reviving industrial and commercial activities by preventing a flood of cheaply produced foreign goods.

## Letter from Mr. Schwab

Strong indorsement of the American valuation plan was given in a letter from Chairman Charles M. Schwab of the Bethlehem Steel Corporation. He declared that "We have American standards in everything but our tariff. To-day, in my opinion, the hour has come when we should put American standards in our tariff laws. The simple and effective way of doing this is by substituting American standards of value for the present archaic standards of foreign values. This is the essence of American valuation which will do for our industries, for our people, for our business, exactly what the gold standard did for currency. It will prevent cheaper currencies of the world from saddling us with economic stagnation.

Mr. Schwab indorsed the purpose of the convention. He declared that indecision is the greatest handicap to progress and that the whole world is calling for action, and that nothing could be more beneficial than a meeting such as that of the association. He cited in support of the American valuation plan the differences in wages paid in the United States and abroad and what it means to the steel industry, transportation and workers in other lines in the United States to permit business to go to foreign countries. Mr. Schwab said:

An ounce of gold to-day in the United States pays the American worker for 17.22 hours of labor as against 50.16 hours in Great Britain, 95.5 hours in Japan, 117.31 hours in France and 201.55 hours in Germany. Last year Congress passed a bill restricting immigration to protect the American worker from the millions of foreigners who would have flooded our labor markets and caused a panic in wages. But what advantage is there to-day to the American worker to have restricted immigration, if, through defects in our tariff, the products of these millions of men and women abroad are now glutting our markets and forcing millions of workers out of their positions? What better employment insurance could we have than a tariff law which insures the

American worker his job in competition with the workmen of the world?

In 1915 it required the work of 5,000 men for one day to make 1,000 tons of steel rails. Let us suppose that to-day an American railroad placed an order for 50,000 tons of rails in Belgium, Germany or England because these rails might be bought for less money abroad than at home. This would mean that 5,000 men in our own country would be idle for 50 days. It would mean that several thousand employees of our railroads would have less work because the railroads would be deprived of hauling these rails and the raw materials such as coal, coke, iron, etc., which come from the mines and furnaces to the mills. It would mean that thousands of miners would have less work if the product of their labor were not used by the mills. It would mean that the workers of the mines, mills and railroads would have less money to spend for the necessities of life with the baker, the grocer or the retailer. This tendency to buy abroad at the expense of our own country is short-sighted economy.

## Quick Passage of Tariff Urged

The convention adopted a resolution, prepared as a memorial and addressed to the President and appropriate members of Congress, urging quick passage of tariff legislation carrying adequate protection based upon the American valuation plan where ad valorem duties apply. The resolution was the subject of about one hour's debate, and all speaking on it were in favor of it, with the exception of H. G. Miles, Racine, Wis., representing the Fair Trade League, who insisted that the American valuation would not cure the remedies it seeks to cure, and it was necessary to incorporate in the tariff act a clause covering depreciated currency or to empower the President to select articles produced under American values and bring them up to the American cost and then add a duty.

John P. Wood, Philadelphia, president of the American Woollen Manufacturers' Association, was chairman of the committee on resolutions. Among other members of the committee was C. A. Moffett of the Gulf States Steel Co.

Discussion by members of the convention during Monday was overwhelmingly in favor of the American valuation. The unprecedented depression in agriculture, industry and commerce, vast unemployment, and the general plight of the country were attributed partly to the lack of a protective tariff, with an American valuation administrative feature, and every speaker during the general discussion went on record strongly in favor of quick passage of a protective tariff act and the American valuation plan. Cutlery interests, with exhibits, particularly emphasized the need of this, showing how hopelessly they are being undersold by foreign producers, especially those in Germany. Speakers represented a wide variety of producing interests of the United States.

One of the interesting talks was that made by James B. Reynolds, former Assistant Secretary of the Treasury in charge of customs, and who now represents the Treasury in connection with an investigation being made regarding the American valuation plan for the Senate Committee on Finance. He said that there is no reason why the American valuation plan cannot be operated in every fair and just way. He told the convention that the report prepared under his supervision now is in the hands of the printers. It naturally does not make any recommendation, but carries selling prices here and abroad, price of production by American manufacturers and related data, taken from the books of American producers and importers.

## Interview with the President

President John E. Edgerton of the National Association of Manufacturers, who presided at the conven-

tion, told of the interview that a committee from the convention held at noon Monday with President Harding. He stated that the President did not commit himself one way or the other regarding the American valuation plan, but did approve of the suggestion that tariff legislation should be enacted as quickly as possible.

Former Representative William E. Humphrey of Washington, representing the American Valuation Society, attacked the propaganda against the American valuation plan, and at some length sought to reply to claims that have been urged against it, and said that none of them could appeal to reason and intelligence. Among other things, he pointed out that it is easier to learn the American wholesale selling price than the foreign valuation; that it does not increase rates, because it is only an administrative feature and that it would not mean increase in prices to American consumers. He insisted that it is imperative that it be adopted.

#### President Mathews Speaks

Dr. John A. Mathews, president of the Crucible Steel Co. of America, who said he spoke for 30 makers of tool steel, pointed out that the normal number of employees ranges from 30,000 to 40,000, but to-day does not exceed 25 per cent of the number. It is not raw

steel, but the products from it, which are coming in from Germany. There is possibly an investment of \$200,000,000, he said, in the fine steel industry here, yet they have not been given as great a protection as is given in the common grades of steel. He said American valuation is needed to protect the American fine steel industry. He spoke of the wide difference in the cost of making steel in the United States and abroad.

George T. Kimball, secretary of the American Hardware Association of Connecticut, maker of locks, produced samples of domestic and foreign products and said that German locks are sold at 36c. per dozen, as against the present American production cost of 98c. per doz.

H. L. Hinry, of the American Valuation Society, presented exhibits of razors of domestic and foreign makes, and showed the widespread difference in costs. One type of imported razor, he said, cost \$1.35 per dozen, landed, while the same kind of American razor costs \$4 each.

M. A. Edgar, McIntyre, Ga., of the Mineral Division of the Southern Tariff Association, and other interests in the South, said the mineral interests of the association are 100 per cent in favor of American valuation, and that the other industries for which he spoke have taken a similar position.

## GERMAN MARKET WEAKER

### Jobbers Shade Prices—Government Control of Scrap Foreseen—Pig Iron Firm

(Special Correspondence)

BERLIN, GERMANY, Jan. 15.—The forcing up of scrap prices during the past few months when the mark was declining daily caused much demand for protection with maximum prices. The result of this is the draft bill recently submitted to the Federal Council. The bill provides for the introduction of maximum prices on old material and empowers the authorities to expropriate stocks whenever such measures are deemed necessary to enforce the law. The scrap interests are vigorously opposing the law and are predicting the utter ruin of this business, but it seems doubtful, provided the law is passed, that the maximum price regulation will immediately come into operation. Indications are that the authorities merely wish to have a weapon to use whenever the price policy should call for it.

The weak tone of the market continued during the past week. Mills are worrying very little over the softening of prices, but jobbers are more inclined to price concessions, which results in considerable variations in quotations. This condition is particularly evident in the finished material market where there is a wide divergence of mills' and jobbers' quotations on many items.

The tone of the pig iron market is firm, a few large deals being closed in Luxemburg and Lorraine iron at an average of 235 fr. per ton. Business in semi-finished material has been light because of the extreme scarcity of material. Mill quotations have been difficult to obtain and merchants have evidently cleaned out their stocks. Rails have sold below the guiding price and concrete bars, heavy sheets and medium sheets were also weaker. In other lines, however, prices are being fairly well maintained, although no increases are noted. The week closed quiet.

Quotations were as follows, per metric ton:

	Marks
Billets, basic (nominal).....	3,900
Sheet bars, basic (nominal).....	3,950
Bar iron .....	6,600 to 6,800
Plats and squares.....	6,200 to 6,400
Rounds .....	6,300 to 6,400
Beams .....	6,000 to 6,400
Hoop iron, ordinary.....	7,000 to 7,300
Rails .....	5,000 to 5,050
Universal plates .....	6,050 to 6,200
Sheets, heavy .....	5,500 to 5,800
Sheets, medium .....	6,700 to 7,200
Plates, light .....	10,500 to 14,500

At the recent meeting of the inland committee of

the Iron Control Federation, it was decided to have a committee representing employers and employees co-operate in the fixing of guiding prices by the Steel Federation (Deutscher Stahlbund). At the first meeting of this joint committee it was agreed to keep the current guiding prices in operation for the present. In view of the anticipated increase of coal taxes and freight rates by February, a meeting has been called for the end of January to again consider a revision of guiding prices. Complaints were heard at the recent meeting that current prices leave practically no profits, often compelling works to operate at a loss. The prevailing price situation is particularly difficult for works which are completing long-term contracts booked at prices considerably below the present-day quotations. Repeated attempts were made, when the boom in business developed, to back out of old contracts or make contracts on a sliding scale. Consumers, however, had learned by experience and insisted upon fixed prices.

#### German Export Orders

The Siemens China Electrical Engineering Co. will supply machinery for a colliery being organized by the military governor of the province of Chekiang Lu, in connection with the proposed exploitation of coal deposits at the lower Yangtsee. The Gutehoffnungshütte, at Oberhausen, have an Argentine order for a bridge across the Riachuela, valued at 3,100,000 pesos. The material for a railroad on the Carmen de Patagones-Puerto San Antonio line will be placed in Germany. The Hannoversche Waggonfabrik Aktien Gesellschaft, car works at Hanover, has taken a 30,000,000 m. order for Jugo-Slavia. A Saxon railroad car works, the Waggonfabrik Busch, at Bautzen, will reorganize the Phönix car works, at Riga, Russia, and will take a financial interest in a new Lettish company which is to acquire former Russian plants.

The American Engineering Standards Committee has approved as tentative American standard the specifications of the American Society for Testing Materials for cold-drawn Bessemer and cold-drawn open-hearth automatic screw stock, and methods of chemical analysis of manganese bronze and gun metal. Copies may also be obtained from the committee at 29 West Thirty-ninth Street, New York, at a price of 25 cents each.

Charles L. Smith, formerly editorial representative of THE IRON AGE at Cincinnati, has opened an office at 202 Mills Building, El Paso, Texas, as manufacturers' agent and exporter.



## EXPORT TRADE IMPROVES

### Peking in Market for Rails and Equipment — Other Inquiries from Japan, Brazil and Argentina

NEW YORK, Jan. 31.—While there is no appreciable gain in export trade, there is evident a slight increase in the volume of inquiries appearing from all markets and there are several which will close during the next two months. A number of sizeable tonnages for Japan were decided upon before the first of February, included in these being a large tin plate inquiry, rails for the South Manchuria Railway and several thousand tons of structural steel for two bridges. The Japanese market has apparently been slightly affected by the depreciation of the yen in international exchange to about 46c. Purchases of light gage black sheets continue but only on a very limited scale compared to the heavy buying of last year. In a majority of cases bars, plates and structural material continue to be placed in Continental markets. According to one Japanese export house American sellers will eventually be forced to quote on a basis of \$40 per ton, c.i.f. Japanese port, on steel bars, in order to compete with European markets.

A recent rail tonnage for an electric railroad in Japan, placed through a large Japanese export house, is reported to have gone to the leading interest. It calls for 3500 tons of 100-lb. rails for the Hanshin Electric Railway. A recent order from a large oil company in Japan for 95,000 ft. of wire rope in 2000, 3000, and 3500-ft. lengths for use in drilling probably in northern Japan and on Saghalien, may portend further purchases of oil well supplies and equipment. A Japanese telegraph company bought during the past week 100 tons of No. 8 gage wire. One light black sheet inquiry in the market calls for 150 tons.

One of the largest inquiries that has appeared from Chinese markets for some time is from the Peking Tramways for rails and equipment, bids closing March 20. The specifications, which will probably total about \$1,000,000 include 39,000 meters (about 5500 tons) of trolley rails and 2000 meters of T rails, electric motors, armatures, controllers, wheels, axles, two sprinkling cars complete, an automobile truck with tower for repairing overhead wires and other equipment. Although the Chinese Minister of Communications is chairman of the board of the Peking Tramways, there is a considerable investment of British capital in the enterprise, which is operating at a good profit. As a result credit arrangements will probably be made without difficulty.

With the passing of the Chinese New Year on Jan. 28, exporters dealing with the Chinese markets believe there will be a slight revival of business. During the past few weeks there have been numerous inquiries of varying size from the Far East for wire shorts, steel bar crop ends, plate cuttings and other similar material, largely consumed in this part of the world. It has been with the greatest difficulty that exporters handling these inquiries have filled their orders, particularly on the wire shorts. An inquiry from a reputable company in China, which includes fair tonnages of sheets, plain and galvanized, tin plate and other material is again active after several weeks. If it is placed in the American market it will probably total over \$200,000.

A rail inquiry from Mexico has appeared through the Bureau of Foreign and Domestic Commerce. It calls for 4400 tons of 56-lb. rails and accessories for standard gage track, 15 switches complete and about 150,000 wooden railroad ties. While there are numerous inquiries from Mexico and an evident desire to buy a wide range of material, exporters see but small prospect of transacting business as sales, as a rule, must be made on long term credits.

Tenders for bids on traction, transport and construction material involved in the electrification of certain lines of the Central Railway of Brazil have been issued. A fair-sized inquiry for port equipment has been issued by the Argentine Director General of

Navigation and Ports, to be used in improving and developing the port of Buenos Aires. Tenders include locomotives, two cranes, cargo towers, concrete mixers, electric motors, etc. This inquiry and the Brazilian railroad tender are both in the hands of the Bureau of Foreign and Domestic Commerce.

Numerous commercial fairs are to be held throughout Europe during this year. Of the forty or more fairs to be held, only a few have a bearing on the iron, steel or machinery industries. The third annual business fair will be held at Brussels, Belgium, April 3 to 19; an international fair at Utrecht, Holland, Feb. 21; British Industries Fair, London and Birmingham, Feb. 27 to March 10; Lyons Fair at Lyons, France, March 1 to 15; Leipzig Fair, Leipzig, Germany, in the spring and fall. The fair of Rio de Janeiro, Brazil, begins Sept. 7 and closes Nov. 15.

### Ford Cars Produced in 1921

It is announced from Detroit that the Ford Motor Co. produced in 1921 a total of 1,054,740 cars, trucks and tractors, closing the year with unfilled orders for 38,260 more, this being sufficient to keep the plants going 11 days at the 1921 average rate. Sales in 1921 are reported at 1,093,000, an increase of 104,213 over 1920 sales, and the highest figure ever reached.

Prices of all models were reduced, effective Jan. 16, to the following (all f.o.b. Detroit):

Touring car, \$348; runabout, \$319; chassis, \$285; coupe, \$580; sedan, \$645; truck chassis, \$430; tractor, \$625. The starter remains at \$70.

### Crane-Makers and Government Co-operate

WASHINGTON, Jan. 31.—A delegation representing 75 per cent of the manufacturers of cranes and 98 per cent of the production in the United States held a conference here yesterday with Assistant Secretary Huston and other officials of the Department of Commerce and discussed plans looking to closer co-operation between the crane makers and the department. The discussion is said to have related to several subjects, including standardization, sales promotion, costs and production.

### Commissioner's Nomination Held Up

WASHINGTON, Jan. 31.—The nomination of George W. Upton, of Warren, Ohio, to the Federal Trade Commission, has been held up by objection of Senator Pomerene, Democrat, of Ohio. Mr. Upton is the husband of Harriet Taylor Upton, vice-chairman of the Republican National Committee, and Senator Pomerene says the appointment is a reward for Mrs. Upton's services.

### Merger Negotiations Still On

Reports that merger negotiations of independent steel manufacturers have fallen through are not founded on facts. Although it is true that several propositions put to the various companies interested have been rejected, negotiations are still proceeding. Conferences will be held in New York on Thursday and Friday of this week by those working on the tri-company consolidation.

The so-called minimum wage ordinance enacted by the common council of Milwaukee on Sept. 8, 1921, to control the wages of municipal employees, has been declared constitutional by the Circuit Court, which denies the petition of Herman A. Wagner, president Wisconsin Bridge & Iron Co. and others, to restrain the city of Milwaukee from enforcing the requirements of the statute.

Smith & Wesson, Springfield, Mass., firearms plant, closed since July last, has resumed operations with about 300 employees, or about one-third the normal force. With the resumption of operations a 20 per cent reduction in wages and salaries went into effect.

# Iron and Steel Markets

## SOME IMPROVEMENT

### Better Outlook in Construction Lines

#### Steel Corporation's Operations Increase At Chicago—Further Price Concessions

As January ends, the amount and character of new demand for steel products is somewhat better than at any time in the month. The larger amount of new construction work ahead, not omitting a better prospect here and there for shipyards, accounts in the main for the improvement, but there is also a healthy volume of replenishment buying.

Chicago rather than Pittsburgh sees conditions in a more favorable light. Operations in the Chicago district are at a higher rate, bringing the Steel Corporation's average for all districts up to 46 per cent.

Of the Illinois Central rail order 16,000 tons was divided between Chicago district mills, while 20,000 tons went to Ensley, Ala. Car builders have given Western mills some good specifications, and 800 new freight cars and the repair of 500 hopper car bodies are included in the week's new business.

Activity in fabricated steel is still the brightest spot. Besides 20,000 tons placed with the American Bridge Co. for the Chicago Union Station, other awards totaled more than 21,500 tons. The volume of new work appearing was about 13,500 tons.

In concrete reinforcing bars a 2000-ton inquiry for Louisville, Ky., and one of 1700 tons for a Seattle pier are conspicuous.

The outlook for shipyard work is improving, though plate-makers have not built high hopes on 1922 as a vessel year. A number of passenger liners are being figured on at the Eastern seaboard, including two for the Old Dominion Line. Five Erie Canal barges are to be built at Chester, Pa., and four Welland Canal boats at Three Rivers, Quebec. Orders have not yet come from recent inquiries sent to Great Lakes shipyards.

Inquiries from Great Britain for a round tonnage of American sheet bars and for 12,000 tons of re-rolling billets are taken to indicate that German or Belgian mills have been unable to make deliveries on some of their contracts. On a foreign bar inquiry 1.30c., Pittsburgh, has been quoted.

Altogether, the week's developments have been more encouraging as to the impetus to come from the seasonal buying expected in the next two months.

In wire and wire nails the South and Southwest have given the first evidence of activity in preparation for spring work. Wire prices show little variation, but in nails recent reports of slight concessions for \$2.50 per keg are confirmed.

The plate orders placed for the latest oil tank work in the Central West indicate that several mills are willing to go to 1.40c., Pittsburgh, for attractive business.

Sheets have been the chief exception to recent reports of irregular prices. But sheet buyers have been particularly cautious and in the past week 3.90c. on galvanized sheets has been established, or

\$2 per ton under the usual market. In blue annealed sheets the competition of plate mills has been felt and in some cases a 1.50c. plate base has been used, resulting in 1.80c. for No. 10.

In the past week the American Sheet & Tin Plate Co. has added to its active tin plate mills, the industry as a whole being on an 80 per cent basis.

The Steel Corporation's statement for the last quarter of 1921, showing net earnings of \$1,700,000 greater than in the third quarter, reflects the 40 per cent increase in output in the last quarter, with the offset of lower prices than the average for the third quarter.

With price concessions freely made on pig iron at Buffalo, Chicago and other Northern centers, and with Alabama iron outside of the immediate Birmingham district selling at \$15.50, furnace, the market is weak, and, with the exception of about 10,000 tons inquired for by Eastern heater manufacturers, no tonnage of considerable size is pending. There is, however, some evidence of increase in melt at a number of jobbing foundries.

Some falling off in merchant pig iron production is likely in the East, two furnaces being scheduled for blowing out.

The week shows a further recession in the composite prices of THE IRON AGE. That for steel is now 2.048c. per lb. against 2.062c. a month ago, 3.057c. a year ago and 1.684c. averaged for the ten years before the war. The pig iron composite is \$18.31 per gross ton, against \$18.60 a month ago, \$30.35 a year ago and \$15.72 the 10-year pre-war average.

## Pittsburgh

PITTSBURGH, Jan. 31.

While the first month of 1922 showed some gain in the number of orders booked as compared with the last month of last year, there is disappointment that the gain has not been more pronounced in view of the almost universal belief that stocks in distributing and consuming hands were pretty low at the end of the year. Conservatism still is the keynote of buying and while few expect a reduction in freight rates to be made in the next few months, this, nevertheless, is the most restrictive influence upon buying. Buyers are taking on only their immediate supplies and refraining from building up stocks of materials "loaded" with to-day's freight charges. Very few big individual tonnages are included in the current inquiries. The largest are in plates in connection with some recent tank orders. Consequently, it is rather difficult to discern prices on sizable tonnages. Since what ordinarily would be regarded as resale lots of plates, shapes and bars can be bought easily at 1.50c., Pittsburgh, it is patent that large tonnages would not be placed that high. The common impression is that the basis of such business is 1.40c., although there is considerable hesitancy on the part of manufacturers in admitting this price, probably because of its effect upon buyers' ideas. It is a buyers' market and even in sheets there are signs this week of deviations from the regular market quotations. A lot of 250 tons of galvanized sheets has been sold at 3.90c., base, Pittsburgh, or its equivalent. Prices of wire products remain indefinite, but there is not much doubt that large buyers of nails are obtaining them at \$2.40, base per keg, Pittsburgh.

Variations in the activities of steel plants of this



## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Jan. 31, 1922	Jan. 24, 1922	Jan. 3, 1922	Feb. 1, 1921
No. 2X, Philadelphia...	\$21.34	\$21.34	\$21.24	\$32.09
No. 2, Valley furnace...	19.60	19.00	19.50	29.00
No. 2, Southern, Cin'ti...	20.50	20.50	21.00	34.50
No. 2, Birmingham, Ala...	16.00	16.00	16.60	30.00
No. 2 foundry, Chicago...	18.50	19.00	19.00	30.00
Basic, del'd, eastern Pa...	19.84	20.25	20.75	31.40
Basic, Valley furnace...	18.00	18.00	18.25	30.00
Bessemer, Pittsburgh...	21.46	21.46	21.96	33.96
Malleable, Chicago...	18.50	19.00	19.00	30.50
Malleable, Valley...	19.50	19.50	19.50	30.00
Gray forge, Pittsburgh...	20.96	20.96	20.96	29.96
L. S. charcoal, Chicago...	30.50	30.50	31.50	40.50
Perrromanganese, seaboard	58.35	60.00	60.00	90.00

Rails, Billets, etc., Per Gross Ton:	Jan. 31, 1922	Jan. 24, 1922	Jan. 3, 1922	Feb. 1, 1921
O.-h. rails, heavy, at mill	\$40.00	\$40.00	\$40.00	\$47.00
Bess. billets, Pittsburgh...	28.00	28.00	28.00	43.50
O.-h. billets, Pittsburgh...	28.00	28.00	28.00	43.50
O.-h. sheet bars, P'gh...	29.00	29.00	29.00	47.00
Forging billets, base, P'gh	32.00	32.00	32.00	48.50
O.-h. billets, Philadelphia...	33.74	33.74	33.74	49.24
Wire rods, Pittsburgh...	36.00	36.00	36.00	57.00
Skelp. gr. steel, P'gh, lb...	1.50	1.50	1.50	2.45
Light rails at mill...	1.50	1.50	1.55	2.75

Finished Iron and Steel, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	1.81	1.81	1.85	2.70
Iron bars, Chicago...	1.60	1.60	1.60	2.68
Steel bars, Pittsburgh...	1.50	1.50	1.50	2.35
Steel bars, Chicago...	1.60	1.60	1.60	2.73
Steel bars, New York...	1.83	1.83	1.88	2.73
Tank plates, Pittsburgh...	1.50	1.50	1.50	2.50
Tank plates, Chicago...	1.60	1.60	1.60	2.88
Tank plates, New York...	1.83	1.83	1.83	2.88
Beams, Pittsburgh...	1.50	1.50	1.50	2.45
Beams, Chicago...	1.60	1.60	1.60	2.83
Beams, New York...	1.83	1.83	1.88	2.83
Steel hoops, Pittsburgh...	1.90	1.90	2.00	8.05

\*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.  
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	Jan. 31, 1922	Jan. 24, 1922	Jan. 3, 1922	Feb. 1, 1921
Sheets, black, No. 28, P'gh	3.00	3.00	3.00	4.35
Sheets, galv., No. 28, P'gh	4.00	4.00	4.00	5.70
Sheets, blue an't'd, 9 & 10	2.25	2.25	2.25	3.55
Wire nails, Pittsburgh...	2.50	2.50	2.50	3.25
Plain wire, Pittsburgh...	2.25	2.25	2.25	3.25
Barbed wire, galv., P'gh...	3.15	3.15	3.15	4.10
Tin plate, 100-lb. box, P'gh	\$4.75	\$4.75	\$4.75	\$7.00

Old Material, Per Gross Ton:	Jan. 31, 1922	Jan. 24, 1922	Jan. 3, 1922	Feb. 1, 1921
Carwheels, Chicago	\$15.00	\$15.00	\$15.50	\$22.00
Carwheels, Philadelphia...	16.50	16.50	16.50	25.00
Heavy steel scrap, P'gh...	14.00	14.00	14.50	16.00
Heavy steel scrap, Phila...	12.00	11.50	11.50	14.50
Heavy steel scrap, Ch'go...	11.25	11.50	11.50	16.50
No. 1 cast, Pittsburgh...	16.00	16.50	16.25	23.00
No. 1 cast, Philadelphia...	16.50	16.50	16.50	23.50
No. 1 cast, Ch'go (net ton)	13.00	13.00	12.50	18.50
No. 1 RR. wrot, Phila...	14.50	14.50	14.50	20.00
No. 1 RR. wrot, Ch'go (net)	10.50	10.50	10.50	14.00

Coke, Connellsville, Per Net Ton at Oven:	Jan. 31, 1922	Jan. 24, 1922	Jan. 3, 1922	Feb. 1, 1921
Furnace coke, prompt...	\$2.75	\$2.75	\$2.75	\$4.50
Foundry coke, prompt...	3.75	3.75	3.75	6.00

Metals, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	13.62½	13.75	13.87½	13.25
Electrolytic copper, refinery	13.37½	13.50	13.62½	12.75
Zinc, St. Louis...	4.50	4.65	4.82½	5.00
Zinc, New York...	4.85	5.00	5.17½	5.30
Lead, St. Louis...	4.40	4.40	4.40	4.60
Lead, New York...	4.70	4.70	4.70	4.85
Tin (Straits), New York...	32.00	31.25	32.75	33.00
Antimony (Asiatic), N. Y.	4.40	4.45	4.50	5.25

### Composite Price, Jan. 31, 1922, Finished Steel, 2.048c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets	Jan. 24, 1922, 2.062c. Jan. 3, 1922, 2.062c. Feb. 1, 1921, 3.036c. 10-year pre-war average, 1.684c.
These products constitute 88 per cent of the United States output of finished steel.	

### Composite Price, Jan. 31, 1922, Pig Iron, \$18.31 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham	Jan. 24, 1922, \$18.39 Jan. 3, 1922, 18.60 Feb. 1, 1921, 30.35 10-year pre-war average, 15.72
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and nearby districts are slight. As intimated in THE IRON AGE last week, the Jones & Laughlin Steel Co. has started up another blast furnace at its Woodlawn, Pa., works, and now has seven of its 12 stacks making iron. The Trumbull Steel Co., Warren, Ohio, and the Weirton Steel Co., Weirton, W. Va., have added to their active steel-making capacity, while among finishing mills we note the starting up of 12 more hot mills by the McKeesport Tin Plate Co., bringing the total number in operation to 36. The Washington Tin Plate Co., after being down for about eight months, to-morrow will resume operations at the rate of about 50 per cent of capacity. This plant resumes on an open shop basis after having been a union plant since the war. The American Sheet & Tin Plate Co. also has added to its active tin plate mills and taking the tin plate industry as a whole, close to 80 per cent of the mills are in operation. This is the most active spot in the entire industry. Pipe mills make the next best showing with about 70 per cent and then follow the sheet mills, which because of the fairly high rate of the leading interest are averaging more than 40 per cent of capacity.

The pig iron market has relapsed into dullness.

Continued weakness is noted in the heavier grades of scrap because the steel companies are out of the market and dealers are loath to take on tonnages since the prospect is poor for an early turnover.

The possibility of a strike of the union coal miners on April 1, on the issue of wages has stimulated slightly the inquiry for coal, but thus far there has been no corresponding stiffening in prices.

Pig Iron.—Both inquiries and sales have been small in the past week and it is impossible to make any change in prices, although the trend, if there is a definite one, is lower. The Allegheny Steel Co. has put out an inquiry for 1000 tons of basic for early delivery this being the only important business now before the trade. Makers having stocks of this grade on their yards are holding it at \$18, but there is a possibility that more of the re-sale iron which recently sold at \$17.75, will become available at that price or even less. Business in foundry iron has been entirely of carload lots, with the exception of 500 tons of No. 2 soft Southern iron sold to a local sanitary ware interest for its Southern works at \$16, Birmingham. The market on Northern No. 2 foundry iron now is \$19 Valley furnace for carload lots, leaving open the inference that less

could be done on larger tonnages. W. P. Snyder & Co. make the average price of basic iron from Valley furnaces for January \$18.1875 as compared with \$18.6375 in December, and on Bessemer \$19.594, in January compared with \$20 in December.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.96 per gross ton:

Basic .....	\$18.00
Bessemer .....	19.50
Gray forge .....	19.00
No. 2 foundry .....	19.00
No. 3 foundry .....	\$18.75 to 19.00
Malleable .....	19.50

**Ferroalloys.**—Interest in the market has again subsided and practically the only important transaction of the week was a sale of 150 tons of 80 per cent ferromanganese to American Steel Foundries, the business going to Carnegie Steel Co. The common impression is that the sale was done at less than the equivalent of \$58.35 Atlantic seaboard. The general quotation of American, English and German makers is \$58.35 Atlantic seaboard on 80 per cent material, but it cannot be said that this price has very substantial basis in sales. There is almost no interest at all in 50 per cent ferrosilicon, but we note a sale of 50 tons of 12 per cent electric furnace Bessemer ferrosilicon at \$37 delivered, Pittsburgh. This compares with \$45.10 f.o.b. Jackson and New Straitsville, Ohio, on the same grade of material produced in a blast furnace. Hardly enough demand exists for spiegeleisen to establish prices. Leading makers are nominally quoting \$25 to \$26, f.o.b. furnace.

We quote 78 to 82 per cent ferromanganese \$62 to \$63.67 for domestic and \$58.35 c.i.f. Atlantic seaboard for English and German. Average 20 per cent spiegeleisen nominal at \$30 to \$32 delivered Pittsburgh or Valleys; 50 per cent ferrosilicon domestic, \$54 to \$55 furnace, freight allowed. Bessemer ferrosilicon is quoted f.o.b. Jackson and New Straitsville, Ohio, furnaces as follows: 10 per cent, \$38.50; 11 per cent, \$41.80; 12 per cent, \$45.10; 13 per cent, \$49.10; 14 per cent, \$54.10; silvery iron, 6 per cent, \$27; 7 per cent, \$28; 8 per cent, \$29.50; 9 per cent, \$31.50; 10 per cent, \$33.50; 11 per cent, \$36; 12 per cent, \$38.50. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is \$4.06 per gross ton.

**Billets, Sheet Bars and Slabs.**—An effort is observed in some quarters to re-establish \$32 as the price of sheet bars, but so far as can be learned it has not yet been successful, due to the fact that demands are small. We still regard \$29 to \$30, Pittsburgh or Youngstown, as fair appraisal of today's price possibilities, with the lower figure likely to prevail on attractive tonnages. There is practically no interest at all in billets or slabs and quotations are merely an appraisal of what might be done if any business appeared.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$28 to \$29; 2 x 2 in. billets, \$29 to \$30; Bessemer and open-hearth sheet bars, \$30; slabs, \$29 to \$30; forging billets, ordinary carbons, \$32 to \$33, all f.o.b. Youngstown or Pittsburgh mills.

**Wire Rods.**—As a sale price, \$38 Pittsburgh or Youngstown for the base size of common soft rods has disappeared and a range of from \$36 to \$37 is more representative of what lately has been done on domestic business. Even lower prices are going on export orders which have been fairly numerous during the past few weeks. Prices are given on page 381.

**Steel Skelp.**—The market is holding fairly well at 1.50c. for pipe skelp, but going business involves such small tonnages that this price must be regarded as nominal and largely untested.

**Wire Products.**—Producers in this district still insist that there has been no abandonment of \$2.50 base per keg, Pittsburgh, for nails, nor of \$2.25 base per 100-lb. Pittsburgh for bright wire as far as the Pittsburgh district is concerned, but it is admitted that sales of nails have been done at \$2.40 base Pittsburgh elsewhere, and that in competitive territory equalization of freights is essential to the securing of business. There is a fairly good run of orders for nails, but they are mostly for small lots to meet the immediate requirements of buyers. Advance buying is stifled by the uncertainty which surrounds prices. Demand for wire still reflects the depression in agricultural centers.

We quote wire nails at \$2.50 base per keg, Pittsburgh, and bright basic and Bessemer wire at \$2.25 base per 100 lb., Pittsburgh.

**Steel Rails.**—Light rails still are held by leading makers rolling them from new steel, at 1.50c. base, but demand is very limited and sales at that figure are rendered difficult by the willingness of makers of re-rolled rails to take orders at 1.45c. base.

We quote 25 to 45-lb. sections, rolled from new steel, 1.50c. base; rolled from old rails, 1.45c. base; standard rails, \$40 per gross ton mill for Bessemer and open-hearth sections.

**Iron and Steel Bars.**—Orders run almost exclusively to carload or less than carload lots. On such business 1.50c. is the common base and it is probable that the appearance of sizable orders would bring out lower quotations. The demand for iron bars also is light and quotations are more of an asking than a selling basis.

We quote steel bars rolled from billets at 1.40c. to 1.50c.; reinforcing bars, rolled from billets, 1.40c. to 1.50c. base; reinforcing bars, rolled from old rails, 1.35c. to 1.40c.; refined iron bars, 2c. to 2.10c. in carloads, f.o.b. mill, Pittsburgh.

**Structural Material.**—Lettings of fabricated steel still are few and those exceeding 100 tons are rare. The McClintic-Marshall Co. will furnish 300 tons for a nurses' dormitory for the West Penn Hospital, Pittsburgh and 200 tons for a new slag crushing plant for the Shenango Furnace Co., Sharpsville, Pa., to replace one destroyed by fire a few weeks ago. The Jones & Laughlin Steel Co. will furnish 100 tons of steel for an extension to the B. F. Jones Building, Pittsburgh, and 75 tons for the Franklin Exchange of the Bell Telephone Co. of Pennsylvania. The Pittsburgh-Des Moines Steel Co. has taken 100 tons for a school building and dormitory for Shadyside Academy, Aspinwall, Pa. According to figures compiled by the Building Construction Employers' Association, work is under way or projected in the Pittsburgh district amounting to more than \$14,000,000. Most of this total, however, is projected work which has not been placed and the common belief among fabricators is that much of it will be deferred until labor costs are more reasonable. Plain material is in light demand and with small lots selling at 1.50c. base, it is commonly believed that sizable tonnages could be placed for less. Prices are given on page 381.

**Plates.**—The Phoenix Iron Works, Meadville, Pa., which recently secured the order for several tanks for the Sinclair Oil Co., requiring about 5000 tons of plates, is reported to have covered on the latter with a Youngstown maker at 1.40c., Pittsburgh, or its equivalent. The common quotation of Pittsburgh, Wheeling and Youngstown makers is 1.50c., Pittsburgh, but only small lots can be sold at that figure.

**Sheets.**—The leading interest continues to report a fairly satisfactory run of orders and specifications, but the report from independent companies is of a different tenor. This condition is finding reflection in a less rigid adherence to the regular market quotations. We note one sale of a fair sized tonnage of galvanized sheets for shipment to the Southwest at 3.90c. base, Pittsburgh, or its equivalent. There is a good deal of pressure against prices on the part of buyers and while manufacturers claim that anything less than 3c. for black or 4c. for galvanized sheets spells a loss, buyers counter by recalling sales \$5 per ton less when manufacturing costs were higher than they are to-day. This conflict of views over prices is confining purchases closely to actual needs. Prices are given on page 381.

We quote sheared plates, ¼ in. and heavier, tank quality, at 1.50c. f.o.b. Pittsburgh.

**Iron and Steel Pipe.**—Orders are fairly satisfactory in merchant pipe and makers are quoting against a number of line pipe inquiries, among them one for 100 miles of 12-in. pipe for a gas line out of the Monroe, La., field. Oil well pipe is slow. The trade is not expecting a very large spring business in oil country pipe because of the likelihood of an early drop in the price of midcontinent crude oil. The spring demand promises better in merchant pipe because of the bright prospect of much house construction this year. Concessions from card prices are being made, notably in the case of line pipe. Discounts are given on page 381.



**Boiler Tube.**—There is so much irregularity to prices that the buyers are frightened off or are taking only such tonnages as they see a use for, in the fear of not getting in at the lowest prices. Discounts are given on page 381.

**Hot-Rolled and Cold-Rolled Strips.**—January proved a fairly good month with most makers, but orders, though fairly numerous, generally were for small tonnages, and the market was not particularly satisfactory, viewed from a price standpoint. There has been good observance of \$3.50 base, Pittsburgh, for cold-rolled strips, but this attitude has frequently resulted in a reduction in intended purchases, while on hot-rolled strips competition from the product of plate, skelp and jobbing mills has made difficult the maintenance of the official quotation of 2c. base, Pittsburgh.

**Tin Plate.**—The recent lull in buying was short lived, as the past week has seen a substantial rally. Specifications are heavier than they were recently, and new orders are more numerous. On production tin plate, the official quotation remains at \$4.75 per base box, Pittsburgh, but this is above the basis of contracts placed by the large container manufacturers. There has been some business in stock tin plate at \$4.50, and even as low as \$4.25, in cases where buyers were willing to take a fairly large percentage of undesirable sizes.

We quote standard production coke tin plate at \$4.75 per base box f.o.b. Pittsburgh for carload lots.

**Cold-Finished Steel Bars and Shafting.**—January was a better month in the number of orders than the trade had experienced in several months, but individually and in the aggregate the bookings were small in comparison with capacity. Occasional sales of screw stock are being made at 2c, but as a general proposition 1.90c. today is maximum on carload lots. It is claimed that at 1.90c. there is no profit with hot-rolled bars at 1.50c. Pittsburgh because that means 1.60c., including the straightening charge, which makers of the latter are insisting upon, while labor charges in the conversion are said to be at least \$4 per ton. Ground shafting is unchanged at 2.25c. base, f.o.b. mill, for carloads.

**Hoops and Bands.**—Business in these products is dull almost to the point of stagnation. As nearly as can be arrived at on the limited business doing, hoops are quotable at 1.90c. to 2c. base, Pittsburgh, and bands at from 1.75c. to 1.90c.

**Nuts and Bolts.**—There is no change in the situation with makers in this district, business being poor and prices very unremunerative, especially in competitive territory. Action of Chicago district makers in naming Chicago or mill bases practically shuts out makers in this district because of the high freight charges they would have to absorb to get into that district. Discounts are given on page 381.

**Rivets.**—There is no improvement in business and while leading makers here are holding heavy rivets at \$2.25 to \$2.35 base per 100-lb., they are losing more business than they are getting at those prices. Lower prices prevail both in the East and West and local makers are disinclined to meet this competition because of heavy freight charges which would have to be absorbed. Prices and discounts are given on page 381.

**Spikes.**—The interest of the trade is centered on an inquiry from New York Central Lines for 40,000 to 50,000 kegs for the various subsidiary systems of that road. The most recent large sales of standard spikes was at \$2.15 base per 100 lb. and it is probable that the New York Central business will go even lower because of its size and the keen competition among makers for orders. Interest in small spikes is limited. Prices are given on page 381.

**Steel Chain.**—In a new card dated Jan. 10, leading makers of steel chain have increased the discounts 5 to 10 per cent on butt, stage, breast and a number of other kinds of chain and products coming under the harness chains and saddlery hardware classification.

**Coke and Coal.**—The coke market has been featured by a rather brisk demand for foundry grade and while

this has not brought about any advance in price it has at least checked an impending decline. Spot tonnages of standard 72-hr. coke still are moving from \$3.75 to \$4.25 per net ton oven. About the only outlet for such tonnages of furnace coke as are coming upon the market is to the bakeries, brick plants and for heating purposes. Hardly any demand is coming from the blast furnaces, as the stacks now in blast are covered by contract. Spot furnace grade of coke is selling from \$2.75 to \$3 per net ton oven. Non-union steam coal for spot or prompt shipment is quotable at \$1.35 to \$1.50 per net ton, mines, run-of-mine grade, and non-union by-product coal of the same grade from \$1.45 to \$1.75. Mine run gas coal holds within the range of \$2 to \$2.35. An effort is being made to obtain higher prices on all grades, but there is too much coal loaded in cars along sidings to allow of any advance in price.

**Old Material.**—Some demand from melters still exists for turnings, borings, and compressed sheets, while one steel company is in the market for a fair-sized tonnage of heavy breakable cast. The market on these grades in consequence, is holding firm, but on the heavier grades, the tendency of prices is in the opposite direction. Practically all users of heavy scrap are out of the market and this has caused dealers to reduce the prices they are willing to pay for material to throw down on their yards. Heavy melting steel is quoted at \$14 to \$14.50, but the more common bid of dealers now is \$14.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate, as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh.....	\$14.00 to \$14.50
No. 1 cast, cupola size.....	16.00 to 16.50
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa. ....	15.00 to 15.50
Compressed sheet steel.....	11.75 to 12.00
Bundled sheets, sides and ends.....	10.50 to 11.00
Railroad knuckles and couplers.....	14.50 to 15.00
Railroad coil and leaf springs.....	14.50 to 15.00
Low phosphorus standard bloom and billet ends.....	17.50 to 18.00
Low phosphorus plates and other grades.....	17.00 to 17.50
Railroad malleable.....	12.50 to 13.00
Iron car axles.....	23.00 to 24.00
Locomotive axles, steel.....	21.00 to 22.00
Steel car axles.....	15.00 to 15.50
Cast iron wheels.....	15.00 to 15.50
Rolled steel wheels.....	14.50 to 15.00
Machine shop turnings.....	10.00 to 10.50
Sheet bar crop ends.....	14.00 to 14.50
Heavy steel axle turnings.....	11.50 to 12.00
Short shoveling turnings.....	11.50 to 12.00
Heavy breakable cast.....	14.50 to 15.00
Stove plate.....	12.50 to 13.00
Cast iron borings.....	11.50 to 12.00
No. 1 railroad wrought.....	11.50 to 12.00

The working force of the Minneapolis Steel & Machinery Co., Minneapolis, will be substantially increased within the next 30 days to handle the regular spring business, according to an announcement by G. M. Gillette, president. The company recently reopened its foundry and is making castings for motors and agricultural machinery.

It is reported by the National Safety Council that the number of persons killed in automobile accidents in the United States in 1921 was approximately 15,000, compared with 11,000 persons in 1920. It has been figured from this that, in 1921, there was on the average a death every 35 minutes, as a result of automobile accidents.

Lieut. Col. A. E. White, director department of engineering, University of Michigan, Ann Arbor, Mich., was the principal speaker at the monthly meeting, Jan. 3, of the Pittsburgh Chapter of the American Society for Steel Treating. His subject was "Top Discard and Its Relation to Quality."

The Western Electric Co., Chicago, is preparing plans for a copper wire mill 305 ft., and a large warehouse extension and a cabinet factory to be erected at the Cicero, Ill., plant. The mill will draw fine wire for the company's own use in the manufacture of telephone and telegraph equipment.

## Chicago

CHICAGO, Jan. 31.

Both mills and warehouses report an improvement in demand. While individual orders and inquiries are usually small, they are numerous and come from widely distributed sources. The leading jobber failed to suffer a sharp drop in orders in the last week of the month, the first time in over a year. Although it is unlikely that any buyers are covering their needs for any considerable period ahead, it is evident that the passing of inventory taking has released a healthy volume of replenishment purchases. Mills continue to receive generous specifications from car builders and the impending purchase of 7300 cars by the Burlington will put additional tonnage on their books.

In the fabricating field the headhouse and concourse of the Chicago Union Station, requiring 20,000 tons, has been awarded to the American Bridge Co. While the trend of business appears to have turned upward, the tendency in prices is toward greater uniformity. On steel plates, shapes and bars the maximum ruling quotation seems to be 1.60c., Chicago, as little current business is moving at 1.65c. or 1.70c. It is felt in some quarters, however, that it would take little to change the complexion of the market. In this connection, it is to be noted that the merchant bar mill of the Inland Steel Co. started operating double turn to-day with three weeks' bookings ahead. The sheet capacity of the same producer is booked through March.

Betterment in demand is reflected in the improved operating situation among local producers. The Illinois Steel Co. is now on a 43½ per cent basis as against 37½ per cent last week. The Inland Steel Co. is operating at from 45 to 50 per cent of ingot capacity. Its entire No. 1 side is now active and the company expects to start the No. 2 side by the middle of February. The Gary rail mill of the Illinois Steel Co. resumed operation yesterday with a backlog which will justify an output of 7000 tons a week for three or four months.

**Pig Iron.**—Inquiry is more active, but actual bookings are still light. The Western Electric Co. has placed an order for 200 tons of Northern foundry for prompt shipment, and there have been a fair number of orders ranging in size from a carload to 100 tons. Shipments from local merchant furnaces are gradually increasing, but nevertheless some iron is still being piled. The trade finds its chief encouragement in the increase in inquiries. Among them may be mentioned 300 to 500 tons of malleable for February delivery, 100 tons of malleable for similar shipment, 100 tons of No. 2 Northern foundry for February and March delivery, 100 tons of 4 to 5 per cent foundry for February shipment, 300 tons of No. 2 foundry for February to April delivery, and 400 to 500 tons of low phosphorus wanted by a local interest for both Eastern and Western plants. On local foundry, basic and malleable \$19, base furnace, is still generally quoted, but some business is being taken at a concession of 50c. On copper free low phosphorus, \$36 delivered, or about \$30.50 f.o.b. furnace, appears to be the ruling market. A sale of a carload of 10 per cent silvery at the Jackson County schedule is reported.

Quotations on Northern foundry, high phosphorus malleable and basic irons are f.o.b. local furnace and do not include a switching charge averaging 70c. per ton. Other prices are for iron delivered at consumers' yards, or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago.....	\$30.50 to \$31.50
Northern coke, No. 1, sil. 2.25 to 2.75.....	19.00 to 19.50
Northern coke, foundry, No. 2, sil. 1.75 to 2.25.....	18.50 to 19.00
Northern high phos.....	18.50 to 19.00
Southern foundry, sil. 1.75 to 2.25.....	22.17 to 22.67
Malleable, not over 2.25 sil.....	18.50 to 19.00
Basic.....	18.50 to 19.00
Low phos., Valley furnace, sil. 1 to 2 per cent copper free.....	30.50
Silvery, sil. 8 per cent.....	32.82 to 34.82

**Ferrolloys.**—Two carload sales of spiegeleisen are reported, one of them for local delivery, having been made at \$36.10, freight allowed. The furnace which sold the material, however, is out of blast and has practically exhausted its stocks. The American Steel Foundries has closed for about 150 tons of ferromanga-

nese and is said to have done so at less than the prevailing market of \$58.35, seaboard.

We quote 78 to 82 per cent ferromanganese, \$66.75, delivered; 50 per cent ferrosilicon, \$56 to \$57.50, delivered; spiegeleisen, 18 to 22 per cent, \$36.50 to \$37, delivered.

**Railroad Rolling Stock.**—The Santa Fe has placed eight dining cars with the Pullman Co. The New York, Chicago & St. Louis has ordered 300 steel underframe stock cars from the Illinois Car & Mfg. Co. The Baltimore & Ohio has let repairs on 500 hopper car bodies to the Pressed Steel Car Co. Cudahy Brothers, packers, Cudahy, Wis., have ordered 500 refrigerator cars from the Pullman Co. The Delaware, Lackawanna & Western has bought five passenger locomotives from the American Locomotive Co.

**Rails and Track Supplies.**—The Illinois Central has bought 30,000 tons of rails, of which 14,000 tons will be rolled by the Tennessee Coal, Iron & R. R. Co., 11,000 tons by the Illinois Steel Co., and 5000 tons by the Inland Steel Co. A few small orders for rails ranging from 1000 to 2000 tons have been booked by the Gary mill within the past week. Local mills expect to get a share of the 24,000 tons of rails to be ordered by the Chesapeake & Ohio and the Hocking Valley. The Louisville & Nashville has distributed orders for track supplies as follows: 2700 tons of splice bars to the Inland Steel Co., 7500 kegs of spikes to the Jones & Laughlin Steel Co., 3500 kegs of bolts to the Illinois Steel Co. Track supplies still show a tendency toward weakness. On standard spikes 2.10c., Pittsburgh, appears to be the market, whereas 3.10c., Pittsburgh, is a common quotation on track bolts and even less than that is reported to have been done. The ruling price on iron and steel tie plates is \$35, f. o. b. mill. As noted in the New York market last week, the Great Northern is inquiring for 450,000 steel tie plates, but in view of the season it is not expected that the business will be placed immediately. There is little demand for light rails.

Standard Bessemer and open-hearth rails, \$40; light rails rolled from new steel, 1.60c. f.o.b. makers' mills.

Standard railroad spikes, 2.10c., Pittsburgh; track bolts with square nuts, 3.10c., Pittsburgh; tie plates, steel and iron, 1.75c., f.o.b. mill; angle bars, 2.40c., f.o.b. mill.

**Bars.**—Mills report a measurable improvement in the demand for mild steel bars. Both manufacturing consumers and jobbers are commencing to replenish their stocks of merchant bars and specifications are being received from carbuilders. The demand for reinforcing bars also promises to increase, as numerous building projects are being figured on. One reinforcing bar company has just placed an order for 2000 tons with a local mill. No material change is to be noted in prices, 1.60c. to 1.70c., Chicago, being quoted on ordinary tonnages, while it is conceded that large orders have gone at as low as 1.55c and 1.50c., Chicago. Purchases running into tonnage are confined principally to carbuilders. The demand for bar iron continues to fluctuate from week to week, bookings during the past few days having tapered off. That the situation is better, however, than during the closing months of 1921, is evidenced by the fact that one local mill is entering its eighth week of uninterrupted operation. Hard steel bar business is still light, although a betterment in demand for reinforcing purposes is to be noted.

Mill prices are: Mild steel bars, 1.60c. to 1.70c., Chicago; common bar iron, 1.60c., Chicago; rail carbon, 1.50c., mill or Chicago.

Jobbers quote 2.53c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 3.40c. for rounds and 3.90c. for flats, squares and hexagons. Jobbers quote hard and medium deformed steel bars at 2.38c. base. Hoops and bands, 3.13c.

**Wire Products.**—Buying is active in the South and Southwest where jobbers are replenishing their stocks. Orders for nails are fairly heavy and poultry netting is also in demand. A slight, though by no means pronounced, improvement in demand for wire by manufacturers is reported. Prices are fairly firm, although some localized shading by Southern mills is noted. For mill prices, see Finished Iron and Steel, f. o. b. Pittsburgh, page 381.

We quote warehouse prices f.o.b. Chicago: No. 9 and heavier black annealed wire, \$3.13 per 100 lb.; No. 9 and heavier bright basic wire, \$3.28 per 100 lb.; common wire nails, \$3.25 per 100 lb.; cement coated nails, \$2.65 per keg.



**Sheets.**—Further business has been booked for export to Japan and domestic consumers are beginning to take more interest in the market. The local independent has built up a backlog which will keep its mills running full for two months. Fully 50 per cent of these bookings is for foreign account. Prices are firm.

Mill quotations are 3c. for No. 28 black, 2.25c. for No. 10 blue annealed and 4c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 38c. per 100 lb.

Jobbers quote: Chicago delivery out of stock, No. 10 blue annealed, 3.38c.; No. 28 black, 4.15c.; No. 28 galvanized, 4.15c.

**Cast Iron Pipe.**—The United States Cast Iron Pipe & Foundry Co. has been awarded 800 tons for Rockford, Ill. The Lynchburg Foundry Co. was the successful bidder on 800 tons for Grand Rapids, Mich., its figure having been \$32.40, base Birmingham. The Central Foundry Co. was low bidder on 300 tons for Lawrence, Kan. Brillion, Wis., takes bids Feb. 7 on 375 tons. The present market appears to range from \$32.50, Birmingham, to \$33.50 for 6-in. and above. The extra for class A and gas pipe has been reduced to \$3. Sellers report much work in prospect.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., \$45.60 to \$46.60; 6-in. and above, \$41.60 to \$42.60; class A and gas pipe, \$3 extra.

**Bolts and Nuts.**—Although demand is still far from satisfactory, some improvement in buying is to be noted. A number of fair-sized orders have been received from jobbers, and the automobile industry is commencing to take interest in the market. The Studebaker Corporation is inquiring for a considerable quantity of bolts. The price situation is still weak, and even nominal discounts in this territory are below those quoted on page 381. Asking prices on machine bolts appear to be 70, 10 and 10 off for small rolled thread, 70 and 10 off for small cut thread, and larger and longer; 70, 10 and 5 off for large carriage bolts; and 80, 10 and 10 off for stove bolts. In other respects the discounts quoted on page 381 represent the nominal market.

Jobbers quote structural rivets, 3.43c.; boiler rivets, 3.53c.; machine bolts up to  $\frac{3}{4}$  x 4 in., 60, 10 and 10 per cent off; larger sizes, 60 and 10 off; carriage bolts up to  $\frac{3}{4}$  x 6 in., 60 and 10 off; larger sizes, 55 and 5 off; hot pressed nuts, square and hexagon tapped, \$3.75 off; blank nuts, \$4 off; coach or lag screws, gimlet points, square heads, 65 and 5 per cent off. Quantity extras are unchanged.

**Structural Material.**—Interest is centered in the Chicago Union Station headhouse and concourse, the steel for which, amounting to 20,000 tons, was awarded to the American Bridge Co. late to-day. A fair amount of fabricating business is in prospect, although during the past week few new inquiries have appeared. Fabricating awards include:

Kittitas County, Wash., 200-ft. pin span; Ellensburg, Wash., 119 tons, to Minneapolis Steel & Machinery Co.

Lincoln Junior High School, Minneapolis, 139 tons, to American Bridge Co.

City National Bank, Long Beach, Cal., 600 tons reinforced concrete substituted for structural steel.

Municipal power plant, Lansing, Mich., 1470 tons, to American Bridge Co.

#### Pending business includes:

London Guarantee & Assurance Co. building, Chicago, 2400 tons; Alfred S. Alschuler, architect.

The mill quotation on plain material ranges from 1.60c. to 1.70c., Chicago. Jobbers quote 2.63c. for plain material out of warehouse.

**Plates.**—There has been a noticeable expansion in buying during the past week. Not only have generous specifications been received from carbuilders, but numerous orders have come from widely distributed sources. Miscellaneous manufacturers who reduced their stocks to the vanishing point prior to the taking of inventory, are now buying for their immediate requirements. Jobbers are also commencing to replenish their stocks. In the opinion of the mills, a continuation of the buying movement now in its inception will result in the re-establishment of the old differential between plates, shapes and bars.

The ruling mill quotations range from 1.60c. to 1.70c., Chicago. Jobbers quote 2.63c. for plates out of stock.

**Old Material.**—Except for purchases of short turnings by a local blast furnace, orders for cast scrap by two local foundries, and a moderate purchase of busheling by an iron mill, the market has been practically devoid of consumptive buying. The price situation is unchanged except for a decline in heavy melting and allied grades and a slight advance in No. 1 busheling. Railroad lists include the Pennsylvania, Central Region, 1100 tons, and the Michigan Central a blind list.

We quote delivery in consumers' yards Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails.....	\$16.00 to \$16.50
Relaying rails.....	20.00 to 25.00
Cast iron car wheels.....	15.00 to 15.50
Rolled or forged steel car wheels.....	13.00 to 13.50
Steel rails, rerolling.....	12.00 to 12.50
Steel rails, less than 3 ft.....	12.50 to 13.00
Heavy melting steel.....	11.25 to 11.75
Frogs, switches and guards cut apart.....	11.25 to 11.75
Shoveling steel.....	10.75 to 11.25
Low phos. heavy melting steel.....	13.50 to 14.00
Drop forge flashings.....	7.50 to 8.00
Hydraulic compressed sheet.....	7.50 to 8.00
Axle turnings.....	8.50 to 9.00

Per Net Ton	
Iron angles and splice bars.....	14.00 to 14.50
Steel angle bars.....	10.50 to 11.00
Iron arch bars and transoms.....	15.00 to 15.50
Iron car axles.....	19.50 to 20.00
Steel car axles.....	12.50 to 13.00
No. 1 busheling.....	8.50 to 9.00
No. 2 busheling.....	6.00 to 6.50
Cut forge.....	10.00 to 10.50
Pipes and flues.....	6.50 to 7.00
No. 1 railroad wrought.....	10.50 to 11.00
No. 2 railroad wrought.....	10.00 to 10.50
Steel knuckles and couplers.....	11.25 to 11.75
Coil springs.....	12.50 to 13.00
No. 1 machinery cast.....	13.00 to 13.50
No. 1 railroad cast.....	12.50 to 13.00
Low phos. punchings.....	11.00 to 11.50
Locomotive tires, smooth.....	9.50 to 10.00
Machine shop turnings.....	4.50 to 5.00
Cast borings.....	6.00 to 6.50
Stove plate.....	12.00 to 12.50
Grate bars.....	10.50 to 11.00
Brake shoes.....	10.50 to 11.00
Railroad malleable.....	11.25 to 11.75
Agricultural malleable.....	11.25 to 11.75

## New York

NEW YORK, Jan. 31.

**Pig Iron.**—The market has been enlivened by inquiries amounting to about 12,000 tons, principally from radiator and other house heating companies. A company at Dover, N. J., is in the market for 5000 tons and another New Jersey heating concern is inquiring for second quarter without naming any definite tonnage. A considerable number of inquiries for moderate tonnages have been received and on the whole conditions are more encouraging. In eastern Pennsylvania, \$20 for No. 2 plain seems to be the minimum, but in the Buffalo district concessions are being freely granted. Reports indicate that \$18.50 Buffalo can be done on No. 2. On the contracts for the tunnel segments, most foundries are figuring on a basis of \$20, furnace, for No. 2 plain, eastern Pennsylvania.

We quote delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$5.46 from Buffalo and \$6.16 from Virginia:

East. Pa. No. 1 fdy., sil. 2.75 to 3.25.....	\$23.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75.....	23.02
East. Pa. No. 2 fdy., sil. 1.75 to 2.25.....	22.52
Buffalo, sil. 1.75 to 2.25.....	24.96
No. 2 Virginia, sil. 1.75 to 2.25.....	28.16

**Ferroalloys.**—Demand for ferromanganese continues to be confined to carload and small lots for early delivery and there have been sales at \$58.35, seaboard. The spiegeleisen market is fairly active so far as small lots are concerned, sales in the week having amounted to 200 tons at prevailing quotations. It is reported that two cargoes of Russian manganese ore, probably Caucasian, will soon be shipped to this country, one sailing in February and the other in March, each containing 5000 and 6000 tons respectively. It is understood that 23.50c. per unit, seaboard, has been refused and that 25c. is being asked. A movement seems to be on to get ore into this country before any possible tariff is ordered by Congress. The 50 per cent ferrosilicon market is quiet and sales are confined to carload lots

and small lots for delivery at prevailing quotations. One seller refuses to make any contracts for 1922 delivery.

Following are prevailing quotations:

#### Ferroalloys

Ferromanganese, domestic, seaboard, per ton..	\$58.35
Ferromanganese, British, seaboard, per ton	\$58.35
Spiegeleisen, 20 per cent, furnace, per ton..	\$26.00
Ferrosilicon, 50 per cent, delivered, per ton,	\$55.00 to \$60.00
Ferrotungsten, per lb. of contained metal..	40c. to 50c.
Ferrochromium, 6 to 8 per cent carbon, 60 to 70 per cent Cr., per lb. Cr., delivered...	13c. to 14c.
Ferrovandium per lb. of contained vanadium	\$4.00
Ferrocobalt, 15 to 18 per cent, net ton	\$200.00
Ferrocobalt, 15 to 18 per cent, 1 ton to carloads, per ton.....	\$220.00
Ferrocobalt, 15 to 18 per cent, less than 1 ton, per ton f.o.b. Niagara Falls, N. Y. ....	\$250.00

#### Ores

Manganese ore, foreign, per unit, seaboard..	22c. to 25c.
Tungsten ore, per unit, in 60 per cent concentrates .....	\$2.00 up
Chrome ore, 40 to 45 per cent Cr <sub>2</sub> O <sub>3</sub> , crude, per net ton, Atlantic seaboard....	\$20.00 to \$25.00
Chrome ore, 45 to 50 per cent Cr <sub>2</sub> O <sub>3</sub> , crude, per net ton, Atlantic seaboard....	\$25.00 to \$27.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS <sub>3</sub> , New York.....	50c to 60c.

**Finished Iron and Steel.**—Most of the current activity locally is in structural steel. The largest contract of the week was 8000 tons for the addition to the department store of R. H. Macy & Co., New York, which will be fabricated by the Levering & Garrigues Co. The American Bridge Co. will fabricate the third section of the new Standard Oil Co. building. Other jobs which have been let during the week bring the total up to 16,500 tons. Bids have gone in during the week on considerable tonnage. New work for which contracts have been let follow:

Addition to store of R. H. Macy & Co., New York, 8000 tons, to Levering & Garrigues Co.

Section of Standard Oil Co. building, 4500 tons, to American Bridge Co.

Apartment house for Joseph Paterno, New York, 700 tons, to Paterson Bridge Co.

Apartment house for Andrew Campagna, New York, 1200 tons, to Paterson Bridge Co.

Bridge at Annapolis, Md., 700 tons, to Phoenix Iron Works Co.

Factory at Bloomfield, N. J., for American Book Co., 300 tons, to Shoemaker-Satterthwait Bridge Co.

Machine shop for Florence Iron Works, Philadelphia, 200 tons, to Levering & Garrigues Co.

Two school houses in Brooklyn and Manhattan boroughs, 700 tons each.

Bridge for City of Philadelphia, 200 tons, to American Bridge Co.

New work on which bids have gone in follow:

Mill building for William Skinner & Sons, Holyoke, Mass., 300 tons.

Recreation building for Clark Thread Co., Newark, 350 tons.

Store at Richmond, Va., 400 tons; has been up once before for bids.

Manufacturing building for Bancroft & Sons, Reading, Pa., 800 tons.

Apartment house, Newark, 800 tons.

15 to 20 tanks of 55,000-bbl. capacity for the Mexican Petroleum Co. to be erected at Carteret, N. J., 3500 to 4000 tons.

Junior high school at Elizabeth, N. J., 600 tons.

Union Memorial Hospital, Baltimore, Md., 900 tons.

Reports of local sales offices for January will show only a slight improvement over December, while some companies report no improvement whatever. Those companies which make a varied line of products, including the lighter forms of steel, have fared much better than those making chiefly plates, shapes and bars. The lines which have enjoyed the best demand are sheets, tin plate, wire products and pipe. Jobbers have completed inventories and are buying in a small way for sorting up stocks. An oil company last week bought 400 tons of line pipe. Interest in plates is chiefly for oil tank work. Prices of most products are weak. Instances have been noted of plates selling in lots of not more than 100 tons at 1.40c., Pittsburgh. Railroads have been able to buy at this price from some mills for repair work. Prices generally quoted on plates, shapes and bars range from 1.45c. to 1.50c., Pittsburgh, but mills are frequently willing to shade

their quoted prices when an order is really in sight. Car builders and other users of steel are estimating their work on a 1.40c. basis. Sales of plates below 1.40c., Pittsburgh, are reported, but are not confirmed. The Lehigh Valley Railroad's orders for car repairs were divided as follows: Pressed Steel Car Co., 200; Buffalo Steel Car Co., 100; Lehigh Structural Steel Co., 100; American Car & Foundry Co., 500; Standard Steel Car Co., 350.

We quote for mill shipments, New York, as follows: Soft steel bars, 1.83c. to 1.88c.; plates, 1.83c. to 1.88c.; structural shapes, 1.83c. to 1.88c.; bar iron, 1.83c. to 1.88c. On export shipments the freight rate is now 28.5c. per 100 lb., instead of 38c., the domestic rate.

**Cast-Iron Pipe.**—The market is pervaded by a general feeling of optimism. Prices are firmer and there is a slightly greater volume of inquiries in hand than at this time a year ago. We quote per net ton, f. o. b., New York, carload lots, as follows: 6-in. and larger \$47.30; 4-in. and 5-in., \$52.30; 3-in., \$62.30, with \$4 additional for Class A and gas pipe.

**Coke.**—The coke market is showing more activity. At least one producer of by-product coke has made a quotation on the coke necessary for foundry use in making the castings for the New York-New Jersey tunnel. By-product coke is quoted at \$8.59, New Jersey points.

**Old Material.**—Although buying prices show a slight increase and there is some activity in small tonnages by mills in the Pittsburgh and other districts, dealers do not consider the present change as a permanent improvement or as setting the market at a higher level than the past few weeks. The market is fairly well established at \$8.50 per ton on heavy melting steel, based largely on buying during the past week by the Cambria Steel Co., which contracted for delivery to Johnstown, Pa., on a tonnage of No. 1 heavy melting steel at \$13.50 delivered, figuring back to about \$8.60 per ton, New York. The Worth Steel Co. and the Alan Wood Iron & Steel Co., have also contracted for small tonnages of No. 1 heavy melting steel, charging box size. Mixed borings and turnings are slightly higher, \$4.50 to \$5.00 being a fair range of quotations by dealers in the market for this material. In fact, one broker asserts that, if necessary, he might go as high as \$5.25 per ton in buying.

Buying prices per gross ton, New York, follow:

Heavy melting steel, yard.....	\$8.00 to \$8.50
Steel rails, short lengths, or equivalent .....	8.50 to 9.00
Rerolling rails .....	9.50 to 10.00
Relaying rails, nominal.....	27.00 to 28.00
Steel car axles .....	10.00 to 10.50
Iron car axles .....	18.50 to 19.00
No. 1 railroad wrought.....	10.00 to 10.50
Wrought iron track.....	8.50 to 9.00
Forge fire .....	5.00 to 5.50
No. 1 yard wrought, long.....	9.00 to 9.50
Cast borings (clean).....	7.00 to 7.50
Machine-shop turnings .....	4.00 to 5.00
Mixed borings and turnings.....	4.50 to 5.00
Iron and steel pipe (1 in. diam. not under 2 ft. long).....	7.25 to 7.75
Stove plate .....	10.00 to 10.50
Locomotive grate bars .....	9.00 to 10.00
Malleable cast (railroad).....	8.00 to 8.50
Car wheels .....	10.50 to 11.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, follow:

No. 1 machinery cast.....	\$16.50 to \$17.00
No. 1 heavy cast (columns, building materials, etc.), cupola size .....	15.50 to 16.00
No. 1 heavy cast, not cupola size....	14.00 to 14.50
No. 2 cast (radiators, cast boilers, etc.) .....	10.00 to 10.50

**Warehouse Business.**—The second half of January was slightly better than the business done during the first two weeks, but the month's average in a majority of cases was scarcely better than December, an extremely poor month for business. There is some shading of prices on certain items and sheets are particularly weak. Galvanized continues to be quoted at 4.75c. per lb., base, which is an asking price, any reasonable order bringing out a lower quotation from some dealer, who is overstocked. Black sheets, too, are being shaded slightly, although generally they are stronger than the galvanized sheet market. Spring steel market is unchanged from the standpoint of warehouse prices, but recent rumors of concessions in price by



mills may affect warehouse prices. The brass and copper market is unchanged. Dealers in pipe are, as a rule, submitting quotations for furnishing the pipe included in the contract for the vehicular tunnel under the Hudson River. This is about the only large contract stirring in this market. Some iron and steel warehouses have been offered stocks of imported material; one offer was of horse shoe nails; another of high carbon Swedish tool steel, the latter being held in stock in England. We quote prices on page 393.

**High Speed Steel.**—Quotations are generally unchanged. One producer has reduced his quotation on 18 per cent tungsten high speed steel from 90c to 85c. per lb. On the whole, prices on this grade now range from 85c. to 90c. per lb. with special brands of some companies quoted up as high as \$1.05 per lb.

## Cleveland

CLEVELAND, Jan. 30.

**Iron Ore.**—Some increase in mine operations is reported. Oglebay, Norton & Co. have started to operate their Berkshire mine in the Iron River, Mich., district Menominee range, one shift six days per week, an increase from one shift three days per week, and have reduced wages to the same basis recently placed in effect by the McKinney Steel Co. in that district. This scale is \$2.10 per day for common labor and \$3 per day for miners. The Charcoal Iron Co. of America has resumed full operations at its Yale mine in the Gogebic range. On Jan. 1 there was approximately 27,450,000 tons of Lake Superior ore on hand at interior, Eastern and lake front furnaces, making a total of 35,895,000 tons on hand at both furnaces and docks on that date. This compares with approximately 38,050,000 tons on hand at furnaces and Lake Erie docks on Jan. 1 last year. Lake Superior ore consumed by furnaces during December amounted to 2,577,000 tons as compared with 2,188,000 tons during November.

We quote delivered lower lake ports: Old range Bessemer, 55 per cent iron, \$6.45; Old range non-Bessemer, 51½ per cent iron, \$5.70; Mesabi Bessemer, 55 per cent iron, \$6.20; Mesabi non-Bessemer, 51½ per cent iron, \$5.55.

**Pig Iron.**—There is a steady but rather light demand for foundry iron in small lots for prompt shipment. Very few inquiries are being made for iron in extended deliveries, although some orders are for deliveries over a 60-day period. The largest sale reported is a 1000-ton lot of low silicon iron classed as No. 3 that was sold by a Valley interest to a Pittsburgh broker at \$18.50. One lake furnace reports sales aggregating 3000 tons during the week including one 500-ton lot placed by an Ohio foundry. Other sales range from around 200 tons down to car lots. Prices on No. 2 foundry iron continue to range from \$19 to \$20, lake furnace, with the lower price the more general quotation. Valley furnaces are quoting this grade at \$19.50. However, there are reports of quotations as low as \$18.50 on foundry iron. In some cases furnaces having contracts for high priced iron have shaded the \$19 price, the buyer taking part of the iron on his high priced contract and the remainder at the new contract price and it may be only in deals of this kind that quotations have gone below \$19. Shipments are fair, showing a little improvement. Low phosphorus iron is weak. A two-carlot sale of copper free iron being made at \$32, Valley furnace, a reduction of \$1 a ton. Report indicates that Eastern furnaces are naming low prices to Western consumers on copper bearing low phosphorus iron, buyers claim to have quotations as low as \$26 to \$26.50. We note the sale of 250 tons of Southern iron to a Pittsburgh district sanitary interest at \$16, which appears to be the minimum quotation in this territory. A few carlot sales of Ohio silvery iron were made during the week at scheduled prices.

Quotations below are f.o.b. local furnace for Northern foundry iron, not including a 56c. switching charge. Other quotations are delivered Cleveland, being based on a \$1.96 freight rate from Valley points, a \$3.36 rate from Jackson and a \$6.67 rate from Birmingham:

Basic .....	\$19.96
Northern No. 2 fdy., sil. 1.75 to 2.25 .....	\$19.00 to 20.00
Southern fdy., sil. 1.75 to 2.25 .....	22.67
Ohio silvery, sil. 8 per cent .....	32.86
Standard low phos., Valley furnace ..	32.00

**Semi-Finished Steel.**—Slabs are weak. Quotations for Cleveland delivery are reported that would figure back to about \$24 at mill and should compel Youngstown mills to quote about \$26 to meet this competition. While Youngstown mills might quote about \$28, they are not inclined to name a lower price.

**Finished Material.**—Orders and inquiries for finished material show some improvement over the previous week, but buying is still almost wholly in small lots and consumers are not inclined to cover for more than their immediate requirements. Steel bars are in better demand than plates and structural material, although recent tank orders have resulted in some good plate business. The Warren City Tank & Boiler Co. has placed 1400 tons of plates for tanks for the Tidewater Oil Co. at Bayonne, N. J., and the Phoenix Iron Co., Meadville, has placed 3000 tons of plates for oil tanks for the Sinclair Oil Co. The price situation shows little change. On steel bars, plates and shapes prices are apparently firm at 1.50c, for carlots, but this price can be shaded \$1 or \$2 a ton on round lots. While there are rumors of prices lower than 1.40c., there is no confirmation of these reports which appear unfounded. The structural outlook has improved. The National Cash Register Co., Dayton, Ohio, has taken bids for a theater building requiring 250 tons and two new inquiries have come out for steel for manufacturing plants, one for 900 tons and the other for 1500 tons. The Cleveland Railway Co. is inquiring for 5500 street car wheels. Orders for four lake boats of Welland Canal size, two 235 ft. long, are reported to have been placed by the George Hall Coal Co., Ltd., of Montreal, to Frazer-Brace & Co. of Montreal to be built at the yards of the Tidewater Ship Building Co. at Three Rivers, Quebec, which were recently taken over by Frazer-Brace & Co. Boat inquiries recently received by American ship yards have not yet resulted in orders.

Jobbers quote steel bars, 2.36c.; plates and structural shapes, 2.46c.; No. 9 galvanized wire, 3.25c.; No. 9 annealed wire, 2.75c.; No. 28 black sheets, 3.75c.; No. 28 galvanized sheets, 4.75c.; No. 10 blue annealed sheets, 3.10c.; hoops and bands, 2.96c.; cold-rolled rounds, 3.25c.; flats, squares and hexagons, 3.75c.

**Sheets.**—Blue annealed sheets in No. 12 and heavier gages are weak owing to the competition of plate mills, some of which are quoting these sheets on a 1.75c plate basis, making the price 2.10c. for No. 10 and there are fairly well authenticated reports that the 1.50c. plate base has been used, making a 1.80c. blue annealed price. Prices on lighter gages are firm, while regular prices on black and galvanized sheets are apparently being held, there are reports that some mills are using a Youngstown instead of a Pittsburgh basing point in making quotations. Consumers are buying only for early requirements.

**Bolts, Nuts and Rivets.**—The improvement noted early in the month continues and makers are getting a moderate volume of small orders, largely from jobbers. Local makers show no disposition to shade prices. Rivets are dull. January has been a disappointing month with the rivet makers, as the improvement in orders early in the month has not been maintained the past two weeks. Prices are irregular, the recognized market quotations of 2.25c. for structural rivets and 2.35c. for boiler rivets being shaded even on small orders.

**Coke.**—Two producers have advanced prices on foundry coke 25c. a ton to \$4.25, but other makers continue to quote standard Connellsville foundry coke at \$4 per ton. There is still a fair volume of carlot orders.

**Old Material.**—The market is quiet, but prices are firm. Activity at present is dull in blast furnace scrap and prices on these grades have advanced. Some dealers are offering \$9 at shipping point for machine shop turnings and a local consumer paid \$10 for a small lot of high quality. Owing to limited plant operations, the supply of borings and turnings is not plentiful. No mills have come in the market and trading is virtually all between dealers who are buying to cover on short sales. There is some demand from Youngstown dealers for open hearth scrap. Dealers' prices for Youngstown

delivery are \$14 to \$14.25 for heavy melting steel and \$12 for compressed steel scrap.

We quote per gross ton, f.o.b. Cleveland, as follows:

Heavy melting steel.....	\$12.00 to \$12.50
Steel rails, under 3 ft.....	12.50 to 13.00
Steel rails, rerolling.....	14.00 to 14.50
Iron rails.....	12.00 to 12.50
Iron car axles.....	18.00 to 19.00
Low phosphorus melting.....	13.00 to 13.50
Cast borings.....	8.75 to 9.00
Machine shop turnings.....	8.75 to 9.00
Mixed borings and short turnings.....	8.75 to 9.00
Compressed steel.....	9.00 to 9.50
Railroad wrought.....	12.00 to 12.50
Railroad malleable.....	12.50 to 13.00
Light bundled sheet stampings.....	6.00 to 7.00
Steel axle turnings.....	9.00 to 10.00
No. 1 cast.....	15.00 to 16.00
No. 1 busheling.....	8.25 to 8.75
Drop forge flashings, over 10 in.....	7.50 to 8.00
Drop forge flashings, under 10 in.....	7.50 to 8.00
Railroad grate bars.....	12.75 to 13.00
Stove plate.....	13.00 to 13.25
Pipes and flues.....	8.50 to 9.00

## Cincinnati

CINCINNATI, Jan. 31.

**Pig Iron.**—Several fair-sized tonnages were sold during the week, the most important of which was undoubtedly one of 500 tons of Southern iron taken by a local melter. This iron was sold on the basis of \$15.50, Birmingham. The specification called for an average silicon content of 2.25 and the entire tonnage was booked at \$16, Birmingham, or \$20.50 delivered. It is said that a slightly lower quotation was made on this business but that the analysis did not entirely meet requirements. At least one furnace quoted \$15.50 on base iron, with a 50c. differential for the higher silicon required to bring up the average. Several other round lots of Southern iron were disposed of, one lot of 600 tons going to an Indiana melter on a \$16 base price and another similar tonnage to a melter in Illinois at the same figure. It is reported that a Kentucky melter had purchased 400 tons on the basis of \$15, Birmingham, but this cannot be confirmed. A sale of charcoal iron is also reported to a car wheel maker, the price, figuring back to a \$26, Lake Superior basis. On Northern iron, while \$19 is apparently the minimum of the Chicago furnaces, brokers are offering iron at \$18.75 and a lake furnace is reported to be booking business at \$18.50 for silicon up to 3.25 per cent. Included in sales of Northern iron was one of 1000 tons to a Michigan melter and 200 tons of high phosphorus to a Cleveland district melter. A Northern Ohio melter also bought 1000 tons of fluorspar. There was little activity in southern Ohio irons and furnaces are holding firmly to the \$19.50 to \$20 range. This price also applies to malleable as was evidenced by a quotation on a 200-ton inquiry from a northern Ohio implement manufacturer. There are very few inquiries current, one from Dayton being for 200 tons of Northern and a local melter being in the market for five cars of special analysis. Several 100-ton inquiries are also current as well as a number of carload lots, all indicating that the market is showing a little more activity than heretofore. An inquiry for a Southern pipe company is for 6000 tons, delivery to be made during the second quarter.

Based on freight rates of \$4.50 from Birmingham and \$2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	\$20.00 to \$20.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	20.50 to 21.00
Ohio silvery, 8 per cent sil.	<b>32.02</b>
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	22.02 to 22.52
Basic, Northern	21.02
Malleable	22.02 to 22.52

**Finished Material.**—With the exception of an order for 450 tons of bars taken from a railroad company, business during the week was rather quiet. The Big Four Railroad is taking bids on several hundred tons of axles, and inquiries are also out for small tonnages of bars, shapes, plates and sheets. A slightly weaker tone is noticed on prices of bars, shapes and plates, it being reported that 1.45c. can now be done on carloads with 1.40c. on a fair tonnage. It is reported that the L. & N. railroad has closed for 3500 tons of splice bars, the order going to a Chicago mill. Sheet prices are holding very firmly at 3c. and 4c. for black and galvanized respectively, while on blue annealed

quotations are fairly steady at 2.25c. There is very little new activity in the structural field. Plans have been posted for the Business Men's Club in Cincinnati, in which 150 tons of steel are involved. U. S. Government Engineers are inquiring for three steel derricks for Louisville and another proposition to come up shortly will be a Federal Reserve Bank at Nashville, Tenn. Much interest is being shown in the Bellnap Hardware Co.'s warehouse at Louisville, bids for which were opened in Chicago on Jan. 30. This is one of the largest jobs that has come up for some time. The U. S. Engineers' Office, Galveston, Texas, will receive bids until Feb. 23 for furnishing and delivering several 2000-barrel steel oil barges. There have been no lettings of consequence although the steel work on the Elk's Temple at Cincinnati has been awarded to the General Iron Works Co. at their bid of \$34,000. There has been a fair demand for wire products during the week, mostly coming from Southern districts. An improvement also is shown in wire nails which are now being regularly quoted at \$2.50 mill.

**Warehouse Business.**—Local jobbers report a fair demand for wire products during the week, but other lines continue rather quiet. Warehouse business is spotty, but orders are becoming a little more numerous and for heavier tonnages. It is expected that with increased manufacturing activities in the metal working field, which now seems possible, jobbers' business will show a steady improvement.

Iron and steel bars, 2.75c. base; hoops and bands, 3.35c. base; shapes and plates, 2.85c. base; reinforcing bars, 2.82 1/2c. base; cold rolled rounds, 1 1/2 in. and larger, 3.50c. base; under 1 1/2 in. and flats, squares and hexagons, 4c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.25c.; No. 28 galvanized sheets, 5.25c.; wire nails, \$3.00 per keg base; No. 9 annealed wire, \$2.85 per 100 lb.

**Tool Steel.**—A slight improvement is noted in the demand for tool steels and several fair sized orders were booked during the week. Prices are unchanged, 18 per cent tungsten high speed steel being quoted at 85c. per lb.

**Coke.**—There are signs of greater activity in the coke market, and melters are now preparing to accumulate a stock in anticipation of a coal strike on April 1. One inquiry for furnace coke for February and March shipment calls for 4000 tons a month. There is still a fair amount of contracting going on and as regards prices they have a much firmer tendency. This is true particularly of furnace coke, which has been quoted by some operators at \$3.25, Connellsville. Connellsville foundry coke is quoted at \$3.75 to \$4.50, New River foundry at \$7 to \$7.50 and Wise County at \$5 to \$5.50. By-product producers are on a \$6, Connellsville base.

**Old Material.**—There is very little activity in the local scrap market, but some sales are reported in the Chicago and St. Louis district. A sale of three cars of borings and turnings for Southern shipment is reported at \$13, delivered. The Big Four Railroad Tuesday closed bids on 13,000 tons. Prices are unchanged.

We quote dealers' buying prices, f.o.b. cars:

Per Gross Ton	
Bundled sheets.....	\$3.50 to 4.00
Iron rails.....	12.00 to 12.50
Relaying rails, 50 lb. and up.....	25.00 to 26.00
Rerolling steel rails.....	10.50 to 11.00
Heavy melting steel.....	9.00 to 9.50
Steel rails for melting.....	9.00 to 9.50
Car wheels.....	12.00 to 13.00
Per Net Ton	
No. 1 railroad wrought.....	8.50 to 9.50
Cast borings.....	3.00 to 3.50
Steel turnings.....	2.00 to 2.50
Railroad cast.....	12.00 to 12.50
No. 1 machinery.....	13.50 to 14.50
Burnt scrap.....	7.50 to 8.00
Iron axles.....	15.50 to 16.50
Locomotive tires (smooth inside).....	9.50 to 10.00
Pipes and flues.....	4.00 to 4.50

George C. Jones and Robert M. Jones have organized the George C. Jones & Co., located at 505 Stambaugh Building, Youngstown, Ohio, dealers in refractories, ferroalloys, coal and coke. For the past 10 years George C. Jones was assistant superintendent of blast furnaces and the open-hearth department of the Youngstown Sheet & Tube Co. Robert M. Jones was a traveling salesman for the Republic Iron & Steel Co., out of its Philadelphia branch, for the past two and one-half years.



## Boston

BOSTON, Jan. 31.

**Pig Iron.**—The Eastern Malleable Iron Co., Naugatuck, Conn., in connection with the New Jersey-New York vehicular tunnel segment requirements, is asking bids on 25,000 to 50,000 tons of iron, silicon 1.50 to 2.00, equal 1922 monthly or equal 1922-1923 monthly deliveries. The Gurney Heater Co., Framingham, Mass., and Saco Lowell Shops, Boston, inquiries remain open. A Providence, R. I., foundry wants 100 tons No. 2X first quarter or 300 tons second quarter iron. No other inquiries of importance have developed. A local stove maker this week bought 300 tons No. 2X Buffalo first quarter iron at \$18.50 furnace, and a Connecticut foundry 400 tons No. 2X eastern Pennsylvania first quarter at about \$24.50 delivered. Other sales reported concern car lots of eastern Pennsylvania at \$19.50 to \$20 furnace, Buffalo at \$19 to \$19.50 furnace, and Alabama at \$16 to \$17 furnace. One car Alabama, silicon 2.75 to 3.25, sold locally at \$24.67 dock, the water rate being \$7.67, in competition with eastern Pennsylvania and Buffalo. The Essex furnace, Port Henry, N. Y., will go out of blast when orders on books are filled unless pig iron prices advance before then. Buffalo pig iron costs \$20.60 to more than \$21 a ton to produce. On this basis losses ranging 70c. per ton and higher are taken on every ton sold in this territory, yet iron, any silicon, is offered as low as \$18.50. Eastern Pennsylvania furnaces selling at \$19.50 to \$20 furnace base also are taking losses in this territory. One round tonnage No. 2X eastern Pennsylvania iron sold recently to Worcester, Mass., interests at \$18.75 furnace, but that price cannot be applied to-day.

We quote delivered at common New England points as follows, having added to furnace prices \$4.06 freight from eastern Pennsylvania, \$5.46 from Buffalo, \$6.58 from Virginia and \$10.66 from Alabama:

East. Penn., silicon 2.25 to 2.75	.....	\$24.06 to \$25.06
East. Penn., silicon 1.75 to 2.25	.....	23.56 to 24.56
Buffalo, silicon 2.25 to 2.75	.....	23.96 to 25.46
Buffalo, silicon 1.75 to 2.25	.....	23.96 to 24.96
Virginia, silicon 2.25 to 2.75	.....	29.08 to 29.58
Virginia, silicon 1.75 to 2.25	.....	28.58 to 29.08
Alabama, silicon 2.25 to 2.75	.....	27.16 to 28.16
Alabama, silicon 1.75 to 2.25	.....	26.66 to 27.66

**Finished Material.**—The New England Structural Co., Boston, is awarded 600 tons structural steel for a local Kresge building and 400 tons for an Everett, Mass., high school. Bids open this week on 150 tons for a Winter St., Boston job. Few bridge jobs involving 100 tons or more give indication of coming up within the next month or two, but office buildings, etc., tonnages of some importance are in the making. Mill representatives report three to five times more business booked in January than in December. Business is still far below normal, however. Individual orders involve small tonnages, mostly from manufacturers. Some buying by jobbers and structural steel firms for filling in stock purposes is noted. Steel bars recently sold in this territory at as low as 1.40c., Pittsburgh base, but business closed this week at 1.45c. and 1.50c.

Jobbers now quote: Soft steel bars, \$2.55½ per 100 lb. base; flats, \$3.05½; concrete bars, stock lengths, \$2.55½; structural angles and beams, \$2.65½; plates, \$2.65½ to \$2.83; tire steel, \$3.85 to \$4.25; open hearth spring steel, \$4.50; trumble spring steel, \$11.50; bands, \$3.15½ to \$3.53; hoop steel, \$3.15½; cold rolled steel, \$3.40 to \$3.90; toe calk steel, \$4; refined iron, \$2.55½ per 100 lb. base; best refined iron, \$1.25; Wayne iron, \$5.50; Norway iron, \$5.50; No. 10 blue annealed sheets, \$3.48 per 100 lb. base; No. 28 black sheets, \$1.60; No. 28 galvanized sheets, \$5.50.

**Cast Iron Pipe.**—The market on cast iron pipe is firmer than it has been before in months. Manufacturers are still quoting as heretofore, namely f. o. b. Boston and district, 3-in. at \$66.70; 4-in. at \$56.70; 6-in. and larger \$50.70, with \$4 differentials on class A and gas pipe. But they are adhering strictly to schedule prices on all sizes, whereas heretofore some wavering was noted on large tonnages. The Warren Foundry & Machine Co. has closed on 200 tons 6-in. to 12-in. pipe for Watertown, Mass., and 125 tons, same sizes, for Somerville, Mass. Bids were opened late yesterday afternoon by Portland, Me., on approximately 2200 tons 6-in. to 30-in. pipe and fittings, and an option on 1200 tons 10-in. and 12-in. pipe for de-

livery up to and including May datings. An award will probably be made this week. The Boston Elevated Railway Co. has purchased 50 tons 6-in. pipe. The firmer undertone of the market is based on the large amount of business already on the books of the manufacturers, as well as indications of a new high turnover record being hung up in 1922.

**Warehouse Business.**—From warehouse cold-rolled steel has been reduced 15c. per 100 lb., rounds from \$3.55 to \$3.40, and squares, flats and hexagons from \$4.05 to \$3.55. Otherwise prices remain as heretofore. The demand for iron and steel continues to expand, but very slowly. Quotations on wire nails still take a range, from \$3.50 to \$3.75 per keg base, but those on other kinds are more uniform. Competition for cap, set and machine screw business is keen, with quotations in favor of the buyer. Sheet zinc has declined another 1c. a lb. to 9½c. per lb. base, in large lots.

**Old Material.**—The market has grown inactive again. A Worcester, Mass., foundry this week bought No. 1 machinery cast at \$17.92 per gross ton delivered. The tonnage involved is small, however, and does not represent the real market. The available supply apparently is in the hands of one firm that refuses to sell at any such price. The narrow spread between pig iron and machinery cast prices limits New England foundry consumption of the latter. Pennsylvania mills, chemical works and a New Jersey manufacturer of a patented flooring are buyers of cast iron borings, which are firmer due to their scarcity. Parksburg Iron Co. buying of skeleton is reported as completed, and the American Steel & Wire Co., Worcester, apparently has covered heavy melting steel requirements. Pennsylvania mills bid \$12 delivered for heavy melting steel. The freight is \$4.90, leaving \$7.10 f. o. b. New England shipping point, easily \$1 less than the lowest price reported by any dealer.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	.....	\$18.00 to \$18.50
No. 2 machinery cast	.....	16.00 to 16.50
Stove plate	.....	15.00
Railroad malleable	.....	13.00 to 13.50

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	.....	\$8.00 to \$9.00
No. 1 railroad wrought	.....	10.50 to 11.00
No. 1 yard wrought	.....	9.50 to 10.00
Wrought pipe (1-in. in diam., over 2 ft. long)	.....	7.00 to 7.25
Machine shop turnings	.....	3.25 to 3.50
Cast iron borings, rolling mill	.....	7.25 to 7.50
Cast iron borings, chemical	.....	8.25 to 8.50
Blast furnace borings and turnings	.....	3.50 to 3.75
Forged scrap and bundled skeleton	.....	4.50 to 5.00
Street car axles and shafting	.....	10.50 to 11.00
Car wheels	.....	11.50 to 12.00
Rerolling rails	.....	10.00 to 10.50

## Buffalo

BUFFALO, Jan. 31.

**Pig Iron.**—Four furnaces are quoting \$19.50 base. One maker is not deviating from the policy not to sell under present conditions and is using the output of one furnace in blast for its own needs in other departments and supplying subsidiaries. The weaker market has not brought out business. One producer sold 1000 tons of foundry iron and another 5000 tons. Malleable is offered at \$19.50, but very little has been placed. The furnace banked by the Donner Steel Co., several weeks ago has not been placed in blast and basic iron requirements in the steel making division of the plant will determine the date of re-opening.

We quote f.o.b. per gross ton Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil.	.....	\$20.00 to \$20.50
No. 2X foundry, 2.25 to 2.75 sil.	.....	19.50 to 20.00
No. 2 plain, 1.75 to 2.25 sil.	.....	19.00 to 19.50
Basic	.....	18.25 to 18.50
Malleable	.....	19.50
Lake Superior charcoal	.....	\$1.75

**Finished Iron and Steel.**—Products which have not been in great demand in several months are being inquired for; bar and shape inquiry with one agency shows much improvement. Inquiry for the purpose of inventory computation is still coming in. Pipe and nail business has dropped off. Tin plate is steady and the demand is stable. A sheet buyer just outside Buffalo is asking prices on 500 tons of black sheets

and another inquiry is for 200 tons of black sheets. A Buffalo agency has sold 100 tons of corrugated sheets. The 1.45c. price on bars is more frequently heard and as low as 1.42½c. was quoted on an ordinary inquiry. Structural demand is poor; the only proposition of any magnitude now in prospect is the Niagara River bridge at Buffalo, but figures have not been asked, authority for the enterprise just having been granted.

**Warehouse Business.**—An improved demand in plates growing out of car work—both new and repair jobs—is evident the latter part of January. Other materials are quiet but sales organizations see prospective improvement in all lines in February.

We quote warehouse prices f.o.b. Buffalo as follows: Structural shapes, 2.65c.; plates, 2.65c.; plates, No. 8 gage, 3.35c.; soft steel bars and shapes, 2.55c.; hoops and bands, 3.15c.; blue annealed sheets, No. 10, 3.40c.; galvanized steel sheets, No. 28, 5.25c.; black sheets, No. 28, 4.25c.; cold-rolled strip steel, 5.90c.; cold-rolled round shafting, 3.40c.

**Coke.**—A prospective coal strike has served to cause improvement in the volume of inquiry. Best grades are freely quoted at \$4 ovens.

**Old Material.**—A price of \$14 on heavy melting steel is virtually in existence because of the failure of several dealers to release tonnages at \$13.50. One mill is in the market for any tonnage, but up to date has declined to pay more than \$13.50. Reports are current that the Steel Corporation is in the market for a considerable tonnage of steel, but dealers have not been approached here.

We quote dealers' asking prices per gross ton f.o.b. Buffalo as follows:

Heavy melting steel	\$13.00 to \$14.00
Low phos., 0.04 and under	17.00 to 18.00
No. 1 railroad wrought	15.00 to 16.00
Car wheels	16.50 to 17.50
Machine shop turnings	7.50 to 8.00
Cast iron borings	7.00 to 8.00
Heavy axle turnings	10.50 to 11.50
Grate bars	12.00 to 13.00
No. 1 busheling	10.00 to 11.00
Stove plate	15.00 to 16.00
Bundled sheet stampings	8.00 to 9.00
No. 1 machinery cast	17.00 to 18.00
Hydraulic compressed	10.50 to 11.50
Railroad malleable	13.00 to 14.00

## St. Louis

ST. LOUIS, Jan. 31.

**Pig Iron.**—Buying of pig iron is still largely confined to carloads, of which there was a fairly good run during the last week. These orders are almost entirely for immediate shipment, with requests to trace through. While melters are short of stocks, they are buying only for immediate needs to fill such orders for their products as may be in hand. For the first time since the World War, Southern iron is offered in this market at a lower price than the Northern product. Offerings are being made of Southern iron by a large producer at the equivalent of \$15.20 Birmingham, or \$20.94 St. Louis. Northern iron at \$19 Chicago plus \$2.72½ freight would cost \$21.72½ here. But the lower price of Southern iron as made by this concern, which has a freight differential of 80c. a ton over producers in Birmingham proper, is not being met by other producers. Nor is the lower price having the effect of producing any business. Some concerns are selling Northern iron on a basis of \$20, Chicago, and Inland is out of the market for January and February. The Eighth Federal Reserve Bank gives widely varying reports from stove manufacturers, showing decreases of as much as 50 per cent to slight increases as compared with December a year ago. Farm implement manufacturers and distributors show heavy decreases from December, 1920, but fair gains over November. Radiator plants are working full time, and report to the bank a continued brisk demand for their products.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.88 freight and war tax from Chicago and \$5.91 from Birmingham:

Northern foundry, sil.	1.75 to 2.25	\$21.725
Northern malleable, sil.	1.75 to 2.25	21.725
Basic		21.725
Southern foundry, sil.	1.75 to 2.25	21.74

**Finished Iron and Steel.**—While no tonnage of consequence is being purchased in any particular quarter, a fair amount of small orders is being placed for pipe for use in the oil fields of Oklahoma and at Mexia,

Tex. The structural demand is small here because of the failure of the union workers and employers and the building trades to get together. Bids will soon be opened on the Catholic orphanage at Alton, involving 200 to 300 tons of reinforcing bars, and the Jewish Hospital at Memphis, 125 tons of bars. New bids are to be asked on the auditorium and market house at Memphis, which likely will include revised plans, as previous bids were rejected because they exceeded the amount of the bond issue. The original plans called for 2500 tons of structural shapes and 500 tons of bars. Some wire nails are being sold, but the market price of \$2.50 Pittsburgh has failed to get the business. Railroad buying let up during the week, and no inquiries were issued.

For stock out of warehouse we quote: Soft steel bars, 2.62½c. per lb.; iron bars, 2.62½c.; structural shapes, 2.72½c.; tank plates, 2.72½c.; No. 10 blue annealed sheets, 3.47½c.; No. 28 black sheets, cold rolled, one pass, 4.15c.; cold drawn rounds, shafting and screw stock, 3.65c.; structural rivets, \$3.52½ per 100 lb.; boiler rivets, \$3.62½; tank rivets 7/16 in. and smaller, 65 and 5 per cent off list; machine bolts, large, 60-10 per cent; small, 60, 10 and 10 per cent; carriage bolts, large, 55-5 per cent; small, 60 and 10 per cent; lag screws, 65-15 per cent; hot pressed nuts, square or hexagon blank, \$4; and tapped, \$3.75 off list.

**Coke.**—Sales of foundry coke are being made almost entirely on a carload basis. Consumers are still buying for immediate needs and for quick shipment. There is more of a tendency among producers to sell for no later delivery than March, and a few are making no quotations beyond February delivery, indicating their confidence in the market. There is a better demand for domestic coke because of colder weather.

**Old Material.**—The market for old material is materially weaker and prices have been marked down from 50c. to \$1 a ton on most grades. One of the large consumers last week took on a tonnage of heavy melting steel and is now out of the market. Other buyers of steel and rolling mill grades in the St. Louis district are absolutely out of the market, and cannot be tempted to purchase even a small tonnage except at bargain prices. Yard dealers are loaded down with material and are unable to stock additional tonnages. So they are compelled to dispose of old material being daily received from the railroads at a severe loss. Current railroad offerings include: Missouri, Kansas & Texas Railway, 1750 tons; Louisville & Nashville, 2500 tons; Pennsylvania System, Northwest region, 750 tons, and an open list issued by the Cleveland, Cincinnati, Chicago & St. Louis (Big Four).

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Old iron rails	\$14.00 to \$14.50
Steel rails, rerolling	10.50 to 11.00
Steel rails, less than 3 ft.	12.50 to 13.00
Relaying rails, standard section	23.00 to 28.00
Cast iron car wheels	13.50 to 14.00
No. 1 heavy railroad melting steel	10.00 to 10.50
No. 1 heavy shoveling steel	9.75 to 10.00
Ordinary shoveling steel	9.50 to 10.00
Frogs, switches and guards, cut apart	10.00 to 10.50
Ordinary bundle sheet	4.00 to 4.50
Cast steel bolsters	9.50 to 10.00
Per Net Ton	
Heavy axles and tire turnings	6.00 to 6.50
Iron angle bars	13.00 to 13.50
Steel angle bars	9.00 to 9.50
Iron car axles	18.00 to 18.50
Steel car axles	12.50 to 13.00
Wrought iron arch bars and transoms	15.00 to 15.50
No. 1 railroad wrought	9.50 to 10.00
No. 2 railroad wrought	8.50 to 9.00
Railroad springs	10.00 to 10.50
Steel couplers and knuckles	10.00 to 10.50
Locomotive tires, 42 in. and over, smooth inside	8.00 to 8.50
No. 1 dealer's forge	8.00 to 8.50
Cast iron borings	5.50 to 6.00
No. 1 busheling	8.50 to 9.00
No. 1 boilers cut in sheets and rings	6.00 to 6.50
No. 1 railroad cast	12.00 to 12.50
Stove plate and light cast	11.00 to 11.50
Railroad malleable	3.50 to 4.00
Agricultural malleable	9.00 to 9.50
Pipes and flues	7.50 to 8.00
Heavy railroad sheet and tank	5.50 to 6.00
Light railroad sheet	3.50 to 4.00
Railroad grate bars	9.50 to 10.00
Machine shop turnings	3.00 to 3.50
Country mixed iron	6.00 to 6.50
Uncut railroad mixed	7.00 to 7.50
Horseshoes	9.50 to 10.00
Railroad brake shoes	9.50 to 10.00

Pierce, Butler & Pierce Mfg. Corporation, maker of radiators and heating apparatus, is erecting a new cupola building and installing a new cupola and blower at its Huntingdon, Pa., plant.



## Philadelphia

PHILADELPHIA, Jan. 31.

All steel products, with the possible exception of sheets, continue to show weakness in price. Plates are conspicuously weak and 1.40c., Pittsburgh, has become a common quotation on desirable tonnages. Shapes and bars are obtainable at 1.45c., while concrete bars have dropped below this figure. The \$4.75 price per base box on tin plate is no longer the market, as sales are being freely made at \$4.60, while as low as \$4.50 has been quoted. Wire nails are weak at \$2.50 and shading of \$1 to \$2 per keg has been freely reported. On export inquiries, prices considerably below the domestic level have been quoted. For example, on 10,000 tons of open-hearth rerolling billets for England \$25.50, Pittsburgh, was quoted, while on a few hundred tons of bars 1.30c., Pittsburgh, was named by a leading maker. Foundry pig iron prices continue firm, though a concession has been made on basic in a recent sale of 1000 tons.

Slowness of business to improve is generally attributed to uncertainty as to the freight rate decision. Few gains in production have been made in January. Eastern mills, in which plate rolling capacity is a large factor, are apparently no better off than they were at the beginning of the month.

**Pig Iron.**—Several large consumers are apparently making every effort to buy foundry iron at prices lower than furnaces in this district appear willing to quote. The furnaces are adhering rigidly to \$20, furnace, for No. 2 plain and \$20.50 for No. 2X. Three New England consumers whose inquiries aggregate 5000 tons have delayed buying for more than a week. Two New Jersey heater manufacturers have each inquired for 5000 tons. In one case second quarter delivery is specified and in the other, half is wanted in second quarter and the other half in third quarter. In the immediate Philadelphia territory there are few inquiries and none exceeding 300 tons. Several Eastern furnaces have given protective bids to foundries which are figuring on the cast iron segments for the New York-New Jersey vehicular tunnel. A method of overcoming the objection which has been raised to deliveries extending over two or three years is to bid on the iron for delivery within six months, the foundry to carry the iron in storage at its own expense or by obtaining bank credit over the remaining period of consumption. Two large steel interests which have iron foundries are said to be in an ideal position to cast the segments economically. In one instance the foundry of a subsidiary shipbuilding company would be utilized, while in the other plant pig iron would be available without cost of transportation, thus eliminating a cost item which may make a low bid possible. There is little interest in steel-making iron. A sale of 1000 tons of basic at \$19.84, delivered, is about 40c. a ton below the last reported transaction. A few hundred tons of copper bearing low phosphorus iron were sold last week at \$28, furnace. The high cost of making iron and the unsatisfactory condition of the market have caused the Thomas Iron Co. to blow out its Hellertown furnace, while for similar reasons Witherbee, Sherman & Co. are putting out their stack at Port Henry, N. Y. The Thomas Iron Co. still has the Alburdis furnace in blast, but this may go out in a few weeks unless conditions improve materially. The Brooke furnace has changed from foundry iron to basic.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia, and include freight rates varying from 84 cents to \$1.54 per gross ton:

East Pa. No. 2 plain, 1.75 to 2.25 sil.	\$20.84 to \$21.26
East Pa. No. 2X, 2.25 to 2.75 sil.	21.34 to 21.76
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.24 to 27.74
Virginia No. 2X, 2.25 to 2.75 sil.	27.74 to 28.24
Basic delivery eastern Pa.	19.84
Gray forge	20.50 to 21.50
Malleable	23.00 to 24.00
Standard low phos. (f.o.b. furnace)	30.00
Copper bearing low phos. (f.o.b. furnace)	28.00

**Billets.**—Philadelphia exporters have quoted on two lots of billets for England, one of 10,000 tons and another of 2000 tons. Sheet bars are also wanted by England, but it is not certain that any of this business will come to the United States. Domestic demand for

rerolling billets is light, but the demand for forging quality is slightly improved. Prices range from \$28 to \$29 on rerolling and \$32 to \$33 on forging, f.o.b. Pittsburgh. On export inquiry \$25.50, Pittsburgh, has been quoted for rerolling billets.

**Ferroalloys.**—There is little demand for ferromanganese, which is still quoted by all interests at \$58.35, seaboard. Spiegeleisen is held at \$25 to \$27, furnace.

**Plates.**—Plates continue the most unsatisfactory of any of the steel products as to both demand and prices. It now appears easy to obtain quotations of 1.40c., Pittsburgh, on attractive lots, while 1.45c. is the ruling quotation on smaller lots. Most buyers do not seem interested in the 1.50c. quotation still adhered to by some mills, though some business is being booked at this price. An Eastern shipbuilding company bought about 200 tons of plates at 1.40c., Pittsburgh, while another shipbuilding company, which is figuring on tunnel shields for the New York-New Jersey vehicular tube, is reported to have received protection at 1.40c., Pittsburgh, on 10,000 tons. The Pusey & Jones shipyard at Wilmington will build two passenger boats for the Old Dominion Line, which will require a small tonnage of plates, shapes and bars, and the Sun Shipbuilding Co., Chester, is expected to build five barges for the Erie Canal. Bids are being taken on a number of other ships, but there is nothing definite yet as to whether the work will go ahead. Eastern mills have made no appreciable gain in operations in January. Chief sources of business are fabricators of oil tanks and marine boilers, while some orders, notably one of 400 tons, are being received from railroads for car repair work. We quote plates at 1.40c. to 1.50c., Pittsburgh.

**Structural Material.**—A gain in bookings of structural shapes is noted by some mills, but very little business is developing in the immediate Philadelphia district. Plain material is obtainable from 1.45c. to 1.50c., Pittsburgh. On especially attractive tonnage, the lower figure has been shaded.

**Bars.**—No marked improvement in the demand for steel bars is noted, though jobbers are buying a bit more freely. Eastern mills have quoted on 1700 tons for a pier at Seattle, Wash., and about 2000 tons will be required for a hardware warehouse at Louisville, Ky. Bar iron makers quote 1.45c., Pittsburgh, but this is frequently shaded to 1.40c.

**Sheets.**—For Eastern shipment, Youngstown mills are frequently quoting f.o.b. Youngstown instead of Pittsburgh. Otherwise sheet prices appear to be firm at 2.25c. for blue annealed, 3c. for black and 4c. for galvanized, Pittsburgh.

**Rivets.**—The Merchant Shipbuilding Co., Chester, is inquiring for 500 tons of special quality rivets for fabricating pipe for the New York aqueduct.

**Warehouse Business.**—Prices are unchanged, and for Philadelphia delivery are as follows:

Soft steel bars and small shapes, 2.50c.; iron bars (except bands), 2.50c.; round edge iron, 2.80c.; round edge steel, iron finish, 1½ x ¼ in., 2.95c.; round edge steel planished, 3.70c.; tank steel plates, ¼-in. and heavier, 2.75c.; tank steel plates, 3/16-in., 2.925c.; blue annealed steel sheets, No. 10 gage, 3.50c.; light black sheets, No. 28 gage, 4c.; galvanized sheets, No. 28 gage, 5c.; square twisted and deformed steel bars, 2.65c.; structural shapes, 2.60c.; diamond pattern plates, ¼-in., 4.60c.; 3/16-in., 4.785c.; ¼-in., 4.90c.; spring steel, 4.10c.; round cold-rolled steel, 3.25c.; squares and hexagons, cold-rolled steel, 3.75c.; steel hoops, No. 13 gage and lighter, 3.25c.; steel bands, No. 12 gage to 3/16-in., inclusive, 3.10c.; iron bands, 3.90c.; rails, 2.75c.; tool steel, 8c.; Norway iron, 5c.; toe steel, 4.50c.

**Coke.**—Furnace coke prices stiffened somewhat today, and it is now difficult to buy either for prompt shipment or on contract at less than \$3.25, Connellsville. Foundry coke is quoted from \$4 to \$4.50, ovens, according to quality.

**Old Material.**—The Alan Wood, Iron & Steel Co. last week bought 2500 tons of steel from a New York dealer at \$12.50, delivered. A Delaware steel maker is offering \$12. Another Eastern mill has paid \$12.50 at its plant. A steel company has sold 1000 tons of low phosphorus plate scrap at \$17.50, f.o.b. its mill. The United States Shipping Board will take bids up to noon on Feb. 15 on 105,000 tons of steel at the Hog Island shipyard. This material was bid on before but

was considered solely as scrap and the bids were rejected. We quote various grades of old material for delivery at consumers' works in this district as follows:

No. 1 heavy melting steel.....	\$12.00 to \$12.50
Scrap rail .....	12.00 to 12.50
Steel rails, rerolling.....	15.00 to 15.50
No. 1 low phos., heavy 0.04 and under.....	18.00 to 19.00
Car wheels .....	16.50 to 17.00
No. 1 railroad wrought.....	14.50 to 15.00
No. 1 yard wrought.....	12.00 to 12.50
No. 1 forge fire.....	10.00 to 10.50
Bundled sheets (for steel works).....	9.50 to 10.00
No. 1 busheling .....	11.00 to 12.00
No. 2 busheling .....	9.00 to 10.00
Turnings (short shoveling grade for blast furnace use).....	9.25 to 10.25
Mixed borings and turnings (for blast furnace use).....	9.25 to 10.25
Machine-shop turnings (for rolling mill and steel works use).....	9.00 to 9.50
Heavy axle turnings (or equivalent).....	9.50 to 10.00
Cast borings (for steel works and rolling mills).....	12.00 to 12.50
Cast borings (for chemical plants).....	13.50 to 14.00
No. 1 cast .....	16.50 to 17.00
Railroad grate bars .....	14.00 to 14.50
Stove plate (for steel plant use).....	14.00 to 14.50
Railroad malleable .....	13.00 to 14.00
Wrought iron and soft steel pipes and tubes (new specifications).....	12.00 to 12.50
Iron car axles.....	No market
Steel car axles.....	17.00 to 18.00

## Birmingham

BIRMINGHAM, ALA., Jan. 31.

**Pig Iron.**—Iron makers of Birmingham express conviction that the market is stronger than it has been in some time. Surface indications point that way. If Sheffield iron is quoted under Birmingham iron the 40c. to 80c. freight differential in favor of Sheffield must be considered. It is a district to itself. One Sloss-Sheffield stack is in operation there. The base at Birmingham is \$16. Among transactions of the week were two 500-ton lots for Southern consumption and one of 500 to 700 tons for the Pacific Coast. These went at \$16. Pacific Coast business is helped by low rates via ship out of Mobile. Bookings were more widely scattered over competitive territory than in many weeks. Two lots went to northern Michigan, one to a northern Ohio stove maker, several others into Illinois and Ohio. The Pacific Coast took two car lots besides the 500 to 700-ton lot. A lot of 750 tons leaves Mobile for Pacific Coast this week and a similar amount has been booked for February sailing. Texas took several lots and the Carolinas were again in the market. The leading interest is credited with having booked 10,000 tons for the leading pipe interest some time ago. Total business for the week seems to have been about 6,000 tons. The Woodward Iron Co. banked a stack about Jan. 20, but it is to resume this week. The company has been operating three merchant stacks several months. Steel and iron men attending the commission hearings in Washington held conferences while there with executives of Southern railroad systems regarding freight rates and report a very receptive mood on part of the executives with reference to some initiative on their part to reduce rates so as to enable Birmingham iron to get further afield and give the makers business.

We quote per gross ton f.o.b. Birmingham district furnaces as follows:

Foundry, silicon 1.75 to 2.25.....	\$16.00
Basic .....	15.00
Charcoal, warm blast.....	32.00

**Cast Iron Pipe.**—High pressure base remains at \$33 with quotations up and down. The base of standard sanitary is at \$37, extra heavy \$28. The Pacific Coast took a total of 7000 to 8000 tons, half and half, of high pressure and sanitary pipe in January, and 12,000 to 15,000 tons of same, two-thirds high pressure and one-third sanitary, in December, a total of approximately 20,000 tons in the two months. At least three makers of each class of pipe participated. The United States Cast Iron Pipe Foundry Co. has begun the installation of five De Lavaud centrifugal pipe casting machines in the North Birmingham plant.

**Coal and Coke.**—Coke has weakened to a base of \$5 to \$5.25. The Federal coal terminal at Mobile will be in operation next month. It has a capacity of

40,000 tons and is alongside the Federal fuel oil stations.

**Finishing Mills.**—The Tennessee company went to 66 2-3 per cent capacity in its open hearth department this week, operating six instead of five furnaces. Mill mill, car works and tie-plate plants are in continuous operation at normal. The Gulf States Steel Co. closed its open-hearth department, but has steel on hand for finishing mills. The blast furnace is to resume soon to replenish depleted iron stocks. Operations are around 60 per cent.

**Old Material.**—Scrap dealers are buying from one another. There is no other business. Reduced freight rates can alone enable other than district business.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Steel rails .....	\$11.00 to \$12.00
No. 1 steel .....	10.00 to 11.00
No. 1 cast .....	14.00 to 15.00
Car wheels .....	13.00 to 14.00
Tramcar wheels .....	12.00 to 13.00
No. 1 wrought .....	12.00 to 13.00
Stove plate .....	11.00 to 12.00
Cast iron borings .....	6.00 to 7.00
Machine shop turnings .....	6.00 to 7.00

## San Francisco

SAN FRANCISCO, Jan. 25.

**Pig Iron.**—The time has not yet come to report a recovery of buying in pig iron in the San Francisco market. Practically no new business of any note has been done since the first of the year, and the largest handlers apparently have nothing better than a small-lot routine turn-over. Foundry activity shows no perceptible improvement, although there is more confidence in the future. It is understood there is an inquiry for about 200 tons of iron here, and both Los Angeles and Tacoma are said to be in the market for 500 tons. Just recently the Conference rates from Gulf points to San Francisco were lowered from \$10.10 a short ton to \$8.36½, which will tend to reduce the differential between foreign materials and domestic. There has been no noticeable change in the price of pig iron, although probably there is a softening tendency.

**Cast Iron Pipe.**—Business has been better in pipe during the past week or two. Demand shows improvement both from municipal and private sources, it being said that one large fabricator has around 1000 tons from the latter. Portland receives bids on Jan. 30 for 2000 tons of 4 to 12-in. pipe. Santa Cruz, Cal., is in the market for 109 tons of 8-in. pipe and fittings, and Seal Beach is letting a contract on Jan. 26 for 230 tons of 4, 6, 8-in. pipe. It is reported that Schofield Barracks, Honolulu, will require 5 miles of 24 and 18-in. pipe. Bids are to open on March 9. Prices are in the neighborhood of \$31 base, and some are expecting an advance shortly.

**Finished Iron and Steel.**—Interest at present is centering on one project, the Harbor Commission's Islia Creek warehouse. The Healy-Tibbets Construction Co., San Francisco, has been appointed manager of general construction, but the contract for 800 tons of bars for the substructure has not yet been placed. It is this which is providing the interest. Competition among the local mills is very keen, perhaps because it is the only sizable prospect in view. During the past fortnight, improvement in demand has failed to materialize perceptibly. There is a little better feeling, but it has hardly taken definite form yet. A little export business is reported being done, and some replacement buying is keeping a semblance of life in the situation. As far as can be ascertained, prices are about steady, although slightly variant figures are occasionally heard.

**Coke.**—Business has been fair in this commodity of late. The Southern Pacific Co. placed 600 tons at a very low figure, and also has taken 500 tons of smithing coke for its West Oakland shops. More consignments of foreign material have arrived, totaling approximately 1100 tons. Inquiries are picking up, and buyers seem a little more disposed to take supplies, even though small. As in the case of pig iron, activity is checked by the prevailingly quiet demand



for finished products. Two other lots, comprising 300 long tons and 550 long tons, are said to be en route to this port. The market price is around \$21, ex ship, San Francisco.

**Old Material.**—This is a routine market only. Movement is confined to the small daily needs of consumers, as foundries are operating in a very limited way. It is reported that there are only two open-

hearth furnaces operating in California at present, and rolling mills are on a hand-to-mouth basis. Perhaps the most interesting feature of the scrap situation is the offering of between 15,000 and 20,000 tons of railroad scrap of various grades, being placed on the market by the Southern Pacific Co. No disposition has yet been made. Prices on the regular scrap offerings are nominal at about the same levels.

## THE ECONOMIC SITUATION

### What the Individual Is Called On to Consider to Bring About Improvement

BY CHARLES A. CARPENTER\*

If we assume that export trade cannot be expanded to give work to our unemployed, we must seek a domestic solution. It has been stated that unemployment is a local issue for our cities to settle individually. This is a grave mistake. If through war forces, population has shifted from one center to another, it should be evident that in a return to peaceful pursuits as great a shift is necessary. The securing of labor for war purposes was not a local issue and so the returning of ex-soldiers and munitions workers to peace time activities becomes the nation's problem.

Undoubtedly economic forces are working this out. As our excessive potential production capacity in any industry is unable to operate, labor drawn to that industry is compelled to seek other means of earning a living. Capital so invested may be dissipated or diverted. Out of a tangle of unemployed and business failures, we are slowly righting ourselves. Why shouldn't national aid be given to these forces? Why try to prolong the agony by ill advised legislation? We assuredly have men in the United States capable of directing the public thought in channels which would show many people the futility of sitting idly by waiting for some miraculous boom to help them out. Our ancestors hewed their way as pioneers and lived happily. We still have land unworked which will support many people.

We can hasten competition in industries seeking too great profit. We can deflate industries which are over-extended by tightening credit. We can frankly face the facts and bring true prosperity back right among ourselves. Then we can charitably aid other peoples solve their ills. When our labor and capital are redistributed in peaceful pursuits, we can size up the foreign situation and by admitting more imports through tariff adjustment, prevent over-expansion here. It is not too much to believe that the United States faces a great era of prosperity, provided selfish forces are curbed and wise leaders secured at this time.

#### Righting the Dislocation

Facing our present business pause and the lowered buying power due to reduced incomes, let us strive to find the least painful way out. Under current circumstances, business which is normal and essential for the country is suffering through causes beyond its control. The speculative ventures unfortunately do not get all the grief. The former are entitled to help—the latter should face the stern law of the survival of the fittest.

Candid publication of potential capacity, basic demand and present stocks on hand in various industries would turn the spotlight on the overcrowded lines.

War requires a great shifting of wealth and labor to fields which we hope are very temporary. In fact, they must be such, as war causes a reduction in our real wealth as a nation. Following a war this misdirected capital and labor must be diverted back to normal. An orgy of extravagance cannot be called normal, as its effects in the final analysis are about the same as war.

We surely wish to progress in civilization. Our people should get proper food, clothing, sanitation, protection of life and property and some enjoyment. Is

it not possible to reawaken the pioneer spirit of old and get each and every one of us to resolve here and now to look to the finer things for true happiness? Let us create a demand for healthy life, the home, reasonable comfort and peace of mind, induced by having a little reserve for unusual conditions. Why not get away from the idea that wasting the efforts of mankind is generosity? Why not see that the waster, rich or poor, is tempting capital and labor into dangerous temporary fields and, therefore, it is against the best interests of the nation to encourage the profligate spender, whose trade is good when he has the money and who stops buying when he is "broke."

The world, as constituted to-day, furnishes mankind with a great abundance of things, making life worth while. There should be no danger of a shortage of necessities and there is ample opportunity for much luxury. As the individual progresses, it is only fair that additional comforts and pleasures should be obtained. The acquirement of these is the mainspring of human progress.

Consequently, the man of steady high income is within his ethical rights when he has a fine home, choice foods, good clothes, luxuries, etc. Provided he lives a life from year to year with similar demands, he is not causing wealth and labor to be misapplied. He has legitimately earned the right to some of nature's surplus, which the less successful or meritorious cannot have. It is also just that an individual who has not squandered his wealth should leave his surplus to others, so they may be given this earned share of the excess.

#### Time Alone the Cure

However, when an individual in times of exceptional prosperity for his particular enterprise or nation, recklessly spends his earnings, he is contributing to the dislocation of economic society. For a brief time he lives in luxury. When bad times come he has no reserve, his income is reduced and he ceases to buy. Reserve and surplus wealth have been dissipated, labor and capital induced to enter non-essential fields due to the lure of large profits, are left standing idle. Time alone can cure the trouble. Nature must be given a chance to re-establish her excess of good things.

Thus, in a general way we account for our periodic ups and downs. War is but an instance of abnormal waste. It would, therefore, seem reasonable to suppose that steady living within natural economic resources would prevent business depressions of the kind with which we are all familiar. We no doubt would still have ups and downs, as there is no guarantee from year to year that nature will always favor us, but the difference between good and bad times would be lessened materially.

Patriotism is as necessary now as it was during the war. The development of the old fashioned home, habits of thrift, and the will to work can be taught. Those who want too much can be curbed. A little altruism and leadership would soon bring us out of our present problem into a golden age of American history. When our acute problem is solved, desirable aliens, willing to be true Americans could be admitted to share our blessings, but we should keep out those who wish to exploit us, giving little or nothing in return. The United States should easily be the leading nation in the evolution of civilization following the world war and it is our duty to take our trust seriously so that the spirit of democracy successfully guiding this country in prosperity, shall be a beacon light to less fortunate peoples—leading them to a higher destiny in peaceful pursuits.

\*Verona Forging Co., Verona, Pa.

## NON-FERROUS METALS

### The Week's Prices

Cents Per Pound for Early Delivery							
	Copper, New York*		Straits	Lead		Zinc	
	Lake	Electro-lytic	Tin New York	New York	St. Louis	New York	St. Louis
Jan.							
25.....	13.75	13.50	30.75	4.70	4.40	5.00	4.65
26.....	13.75	13.50	31.00	4.70	4.40	4.95	4.60
27.....	13.75	13.50	31.25	4.70	4.40	4.90	4.55
28.....	13.75	13.50	....	4.70	4.40	4.90	4.55
30.....	13.62½	13.37½	31.50	4.70	4.40	4.87½	4.52½
31.....	13.62½	13.37½	32.00	4.70	4.40	4.85	4.50

\*Refinery quotation.

### New York

NEW YORK, Jan. 31

Copper and zinc are inactive and lower, while tin and lead have been bought fairly freely at steady prices.

**Copper.**—Despite the fact that large consumers bought heavily in the last quarter of last year and are specifying on contracts steadily each week, there has been enough inquiry from a few fairly large consumers, together with demand for small lots here and there, so that the temptation to sell on the part of some interests has been yielded to and the market for electrolytic copper is down to 13.62½c., delivered, or 13.37½c., refinery. At these levels some business has been done in quantities larger than small lots. Very little is heard of foreign demand, but it is understood that this is keeping up fairly well. Lake copper is slightly lower at 13.62½c., delivered.

**Copper Averages.**—The average price for Lake copper for the month of January, based on daily quotations in THE IRON AGE, is 13.81c. The average price of electrolytic copper is 13.55c., delivered or 13.30 c., refinery.

**Tin.**—Excepting last week Thursday, January 26, the market was dull and quiet, but on that day large sales of Straits tin were made, variously estimated at from 600 to 1000 tons. The latter figure is regarded by some as high because some sellers were buyers and others were not anxious to sell. The activity on the day referred to started in the morning with brisk inquiry which resulted in immediate business and by afternoon the market was in full swing and all reasonable offers were accepted. Dealers and importers were the principal buyers, but consumers were also among the purchasers. On the following day, Friday, the small advance in the London market was disappointing in view of the activity here the day before and the market turned dull and stagnant and has been so up to the present time. On Jan. 25 on the New York Metal Exchange 25 tons of Straits tin for May-June shipment was sold at 30.25c., and also 50 tons for delivery in 1922, at seller's option, was sold at 30c. To-day the market has been quiet and Straits tin is quoted at 32c., New York, while the London market advanced £2 per ton over yesterday's price, with spot standard quoted at £159 10s., future standard at £161 5s. and spot Straits at £161 10s., with the market active and strong. Interest centers in speculation as to deliveries into consumption in January, being variously estimated from 4000 to 4500 tons. Arrivals thus far this month have been 3910 tons, while the quantity afloat is reported at 6935 tons.

**Lead.**—Demand continues steady and prices are unchanged, with that of the leading interest at 4.70c., New York and St. Louis, and that of the independents at 4.40c., St. Louis and 4.70c. to 4.75c., New York and eastern points. In the opinion of one seller, if consumption continues at the present rate, scarcity of lead may develop unless production is increased.

**Zinc.**—This market continues lifeless and devoid of feature. Prices have declined almost daily and prime Western for early delivery is now quoted at 4.50c., St. Louis, or 4.85c., New York, a decline of 15 points in

the week. Sales are still confined to carload and 100-ton lots for immediate shipment, but these are by no means numerous.

**Antimony.**—Wholesale lots for early delivery are slightly easier at 4.40c. per lb., New York, duty paid.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, in wholesale lots for early delivery, continues to be quoted by the leading interest at 19c. to 19.10c. per lb. f. o. b. plant, depending on the quantity. Importers' metal of the same grade is obtainable at 17.50c. to 18.50c., New York, duty paid.

**Old Metals.**—Business is very quiet as a result of the discouraging conditions in the copper market. A few holders are inclined to lower prices while the others have faith in the ultimate rise in copper. Dealers' selling prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	13.00
Copper, heavy and wire.....	12.25
Copper, light and bottoms.....	9.75
Heavy machine composition .....	10.25
Brass, heavy .....	8.00
Brass, light .....	6.00
No. 1 red brass or composition turnings.....	8.25
No. 1 yellow rod brass turnings.....	6.25
Lead, heavy .....	4.25
Lead, tea .....	3.25
Zinc .....	3.00

### Chicago

JAN. 31.—Efforts to sell in a reluctant market have resulted in further price declines in copper and zinc. Tin, however, has advanced. No changes in old metal prices are reported. We quote in carload lots: Lake copper, 13.50c.; tin, 33c.; lead, 4.50c.; spelter, 4.60c.; antimony, 6.50c., in less than carload lots. On old metals we quote: Copper wire, crucible shapes and copper clips, 10c.; copper bottoms, 7.50c.; red brass, 7.50c.; yellow brass, 5.75c.; lead pipe, 3.25c.; zinc, 2c.; pewter, No. 1, 22c.; tin foil, 23c.; block tin, 25c.; all buying prices for less than carload lots.

### St. Louis

Jan. 31.—Lead for the week was slightly lower, while slab zinc was 10 points lower. We quote: Lead, 4.35c. to 4.40c., carlots; slab zinc, 4.65c. On old metals prices are: Light brass, 3.50c.; heavy red brass and light copper, 7c.; heavy yellow brass, 4c.; heavy copper and copper wire, 7.50c.; zinc, 2c.; pewter, 15c.; tin foil, 16c.; tea lead, 2c.; aluminum, 9c.

### General Fireproofing Co. Loss

YOUNGSTOWN, OHIO, Jan. 31.—General Fireproofing Co. showed a loss of \$201,000 last year after an inventory shrinkage of \$285,000 and payment of \$97,500 in preferred dividends, but before common dividend. Gross sales were \$5,120,000 and average operations 60 per cent, share holders were informed at annual meeting.

The sale of tractors in Peru has been laboring under serious handicaps during the past year due to the adverse rates of exchange and to the general business depression, according to a report compiled by the Agricultural Implement Division, Department of Commerce. But few sales have been made in the past few months, resulting in the accumulation of considerable stocks. The American tractor has a practical monopoly of the market, as it was first introduced and is best known.

A directory of firms whose trade touches the United States, South America or Germany is to be issued shortly as Guia Aleman Americana. It will be in three languages, English, Spanish and German. The book will contain 1500 large pages and it is issued at \$6 by the Caxton Translations Institute, 47 Victoria Street, London, S. W. 1, England, whose agent in the United States is the Ford Corporation, 97 Broadway, New York.



# Prices Finished Iron and Steel, f.o.b. Pittsburgh

## Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia, domestic...	\$0.36	Kansas City .....	\$0.815
Philadelphia, export...	0.265	Kansas City (pipe)...	0.77
Baltimore, domestic...	0.35	St. Paul .....	0.665
Baltimore, export .....	0.255	Omaha .....	0.815
New York, domestic...	0.38	Omaha (pipe) .....	0.77
New York, export.....	0.285	Denver .....	1.35
Boston, domestic .....	0.405	Denver (wire products)	1.415
Boston, export .....	0.285	Pacific Coast .....	1.665
Buffalo .....	0.295	Pacific Coast, ship plates	1.335
Cleveland .....	0.24	Birmingham .....	0.765
Detroit .....	0.325	Jacksonville, all rail...	0.555
Cincinnati .....	0.325	Jacksonville, rail and	
Indianapolis .....	0.345	water .....	0.46
Chicago .....	0.38	New Orleans .....	0.515
St. Louis .....	0.475		

The minimum carload to most of the foregoing points is 35,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 55c.; ship plates, 75c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes and wire hoops, 75c.; sheets and tin plates, 60c. to 75c.; rods, wire rope, cable and strands, \$1; wire fencing, netting and stretcher, 75c.; pipe, not over 8 in. in diameter, 75c.; over 8 in. in diameter, 2 1/2c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

## Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, 1/4 in. thick and over, and zebs, structural sizes, 1.50c.

Sheared plates, 1/4 in. and heavier, tank quality, 1.50c.

## Wire Products

Wire nails, \$2.50 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.25 and shorter than 1 in., \$1.75; bright Bessemer and basic wire, \$2.25 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$2.25; galvanized wire, \$2.75; galvanized barbed wire, \$3.15; galvanized fence staples, \$3.15; painted barbed wire, \$2.65; polished fence staples, \$2.65; cement-coated nails, per count keg, \$2.00; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 65 to 70 1/2 per cent off list for carload lots; 67 to 69 1/2 per cent for 1000-rod lots, and 66 to 68 1/2 per cent for small lots, f.o.b. Pittsburgh.

## Bolts and Nuts

Machine bolts, small, rolled threads, 70, 10 and 5 to 70, 10 and 7 1/2 per cent off list  
Machine bolts, small, cut threads, 70 and 5 to 70 and 10 per cent off list  
Machine bolts, larger and longer, 65, 10 and 5 to 70 and 10 per cent off list  
Carriage bolts, 1/2 in. x 6 in.:  
Smaller and shorter rolled threads, 65, 10 and 10 per cent off list  
Cut threads ..... 65 and 10 to 70 per cent off list || Longer and larger sizes..... | 65 and 10 to 70 per cent off list |
Lag bolts .....	70 and 10 to 70, 10 and 5 per cent off list
Flow bolts, Nos. 1, 2 and 3 heads.....	60 and 10 per cent off list
Other style heads.....	20 per cent extra
Machine bolts, c.p.c. and t. nuts, 1/2 in. x 4 in.: Smaller and shorter.....	65 and 5 per cent off list
Larger and longer sizes.....	65 per cent off list
Hot pressed sq. or hex. blank nuts.....	\$5.50 off list
Hot pressed nuts, tapped.....	\$5.00 to \$5.25 off list
C.p.c. and t. sq. or hex. blank nuts.....	\$5.25 off list
C.p.c. and t. sq. or hex. blank nuts, tapped.....	\$5.00 off list
Semi-finished hex. nuts: 1/4 in. to 9/16 in. inclusive.....	80, 10 and 10 per cent off list
Small sizes S. A. E.....	80, 10, 10 and 10 per cent off list
1/2 in. to 1 in. inclusive, U. S. S. and S. A. E.	70, 10, 10 and 10 per cent off list
Stove bolts in packages.....	80, 10 and 5 per cent off list
Stove bolts in bulk.....	80, 10 and 7 1/2 per cent off list
Tire bolts .....	65, 10 and 10 per cent off list
Track bolts, carloads.....	3c. to 3.25c. base
Track bolts, less than carloads.....	4c. to 4.25c.

## Upset Square and Hex. Head Cap Screws

1/2 in. and under..... 80 and 10 to 80, 10 and 10 per cent off list  
9/16 in. to 1 in. .... 80 and 10 to 80, 10 and 10 per cent off list

## Upset Set Screws

1/4 in. and under..... 80, 10 and 5 to 85 per cent off list  
9/16 in. to 1 in. .... 80, 10 and 5 to 85 per cent off list

## Milled Square and Hex. Cap Screws

All sizes ..... 75 and 10 to 80 per cent off list |

## Milled Set Screws

All sizes ..... 70, 10 and 10 per cent off list |

## Rivets

Large structural and ship rivets.....\$2.25  
Large boiler rivets.....2.35  
Small rivets.... 70, 10 and 10 to 70, 10, 10 and 5 per cent off list

## Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$36 to \$37; chain rods, \$36 to \$37; screw stock rods, \$41 to \$42; rivet and bolt rods and other rods of that character, \$36 to \$37; high carbon rods, \$43 to \$49, depending on carbons.

## Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, \$2.15 to \$2.20 base per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, 1/2-in., 3/4-in. and 7/16-in., \$2.25 to \$2.30 base; 5/16-in., \$2.25 to \$2.30 base. Boat and barge spikes, \$2.25 to \$2.30 base per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Track bolts, 3c. to 3.25c. base per 100 lb. Tie plates, \$2 per 100 lb. Angle bars, \$2.40 per 100 lb.

## Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., \$9.30 per package; 8-lb. coating, 1 C., \$9.60; 15-lb. coating, 1 C., \$11.80; 20-lb. coating, 1 C., \$13; 25-lb. coating, 1 C., \$14.25; 30-lb. coating, 1 C., \$15.25; 35-lb. coating, 1 C., \$16.25; 40-lb. coating, 1 C., \$17.25 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

## Iron and Steel Bars

Steel bars, 1.50c. from mill. Refined bar iron, 2c. to 2.10c.

## Welded Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/2	54 1/2	28	1/2 to 3/4	3 1/2	22 1/2
3/4	60	33 1/2	3/4	36 1/2	18 1/2
1	65	50 1/2	1	42 1/2	27 1/2
1 1/4	69	56 1/2	1 to 1 1/2	44 1/2	29 1/2
1 to 3	71	58 1/2			

## Lap Weld

2	64	51 1/2	2	39 1/2	25 1/2
2 1/2 to 6	68	55 1/2	2 1/2 to 6	42 1/2	29 1/2
7 to 8	65	51 1/2	7 to 12	40 1/2	27 1/2
9 to 12	64	50 1/2			

## Butt Weld, extra strong, plain ends

1/2	50 1/2	33	1/2 to 3/4	4 1/2	37 1/2
3/4	56	38 1/2	3/4	35 1/2	23 1/2
1	62	50 1/2	1	42 1/2	28 1/2
1 1/4	67	55 1/2	1 to 1 1/2	44 1/2	30 1/2
1 to 1 1/2	69	57 1/2			
2 to 3	70	58 1/2			

## Lap Weld, extra strong, plain ends

2	62	50 1/2	2	40 1/2	27 1/2
2 1/2 to 4	66	54 1/2	2 1/2 to 4	43 1/2	31 1/2
4 1/2 to 6	65	53 1/2	4 1/2 to 6	42 1/2	30 1/2
7 to 8	61	47 1/2	7 to 8	35 1/2	23 1/2
9 to 12	55	41 1/2	9 to 12	30 1/2	18 1/2

To the large jobbing trade the above discounts are increased by one point, with supplementary discounts of 5 and 2 1/2 per cent.

## Boiler Tubes

The following are the discounts for carload lots f.o.b. Pittsburgh:

Lap Welded Steel		Charcoal Iron	
1 1/2 in.	26 1/2	1 1/2 in.	5
2 to 2 1/2 in.	41	2 1/2 to 3 in.	15
2 1/2 to 3 in.	52	3 to 3 1/2 in.	25
3 1/2 to 4 in.	57	3 1/2 to 4 1/2 in.	30
		4 1/2 to 5 in.	32

## Standard Commercial Seamless Boiler Tubes

New discounts have been adopted on standard commercial seamless boiler tubes, but manufacturers are not yet ready to announce them for publication, and for that reason we publish no discounts this week.

## Sheets

Prices for mill shipments on sheets of standard gage in carloads, f.o.b. Pittsburgh, follow:

Blue Annealed		Cents per Lb.	
No. 8 and heavier.....	2.20	Nos. 11 and 12.....	2.30
Nos. 9 and 10 (base)....	2.25	Nos. 13 and 14.....	2.35
		Nos. 15 and 16.....	2.45

## Box Annealed, One Pass Cold Rolled

Cents per Lb.		Cents per Lb.	
Nos. 17 to 21.....	2.80	No. 28 (base).....	3.00
Nos. 22 to 24.....	2.85	No. 29 .....	3.10
Nos. 25 and 26.....	2.90	No. 30 .....	3.20
No. 27 .....	2.95		

## Galvanized

Cents per Lb.		Cents per Lb.	
Nos. 10 and 11.....	3.00	Nos. 25 and 26.....	3.70
Nos. 12 to 14.....	3.10	No. 27 .....	3.85
Nos. 15 and 16.....	3.25	No. 28 (base).....	4.00
Nos. 17 to 21.....	3.40	No. 29 .....	4.25
Nos. 22 to 24.....	3.55	No. 30 .....	4.50

## Tin-Mill Black Plate

Cents per Lb.		Cents per Lb.	
Nos. 15 and 16.....	2.80	No. 24 (base).....	3.00
Nos. 17 to 21.....	2.85	No. 29 .....	3.05
Nos. 22 to 24.....	2.90	No. 30 .....	3.05
Nos. 25 to 27.....	2.95	Nos. 30 1/2 and 31.....	3.10

## PERSONAL

At a recent meeting of the Cleveland Worm & Gear Co., Cleveland, J. W. Hertzler, who has been vice-president, secretary and general manager of that company, was made president, succeeding F. M. Gregg in that capacity. Mr. Hertzler continues as general manager. Arthur H. Clark, who has been treasurer, was given the additional duties of the secretaryship. A. V. Cannon was elected vice-president.

Samuel Mather, of Pickands, Mather & Co., Cleveland, has made a gift of approximately \$2,500,000 to the Western Reserve University, Cleveland, having offered to bear the entire cost of erecting the new Medical School buildings for the university. This gift makes a total of more than \$4,000,000 given by Mr. Mather to this Cleveland institution.

Frank G. Payson of the Frank G. Payson Co., 9 South Clinton Street, Chicago, general sales agent for the Logan air-operated chucks and labor-saving devices, has been appointed manager of sales for the Logansport Machine Co., at Logansport, Ind., effective Feb. 1. The Frank G. Payson Co. will discontinue business and the corporation has been dissolved.

M. B. Hoagland, formerly of the United States Steel Corporation, has been elected president and general manager of the Signal Motor Truck Co., Detroit.

F. J. Griffiths, who recently announced his resignation as vice-president and general manager of the Central Steel Co., Massillon, Ohio, will remain with the company in his former capacity, having been re-elected at a recent meeting, when the reorganization of the company was completed. The reorganized company, with the consolidation of formerly affiliated units, has practically the same organization as before. R. E. Bebb is chairman and president; C. E. Stuart, secretary and treasurer; C. C. Chase, vice-president, and in charge of the sheet division; H. M. Naugle, vice-president and in charge of the metal lumber division; J. M. Schlendorf, manager of sales; B. F. Fairless, superintendent and manager of operations; Myron Phillips, manager of production; E. C. Smith, chief metallurgist, and George D. Evans, purchasing agent.

Charles A. Irwin, until recently vice-president and general manager of the Canton Sheet Steel Co., Canton, Ohio, has become president and treasurer of the Milwaukee Rolling Mill Co., Milwaukee, Wis., which completed a sheet mill plant last year. He left for Milwaukee this week to assume his new duties. Mr. Irwin was president of the Canton company from the time its plant was built in 1909 until it was taken over a few years ago by the Hydraulic Steel Co. of Cleveland. His son, Jay Irwin, who has been assistant auditor of the Canton company, has resigned and will be associated with his father at the Milwaukee plant.

Ambrose Swasey, Warner & Swasey Co., Cleveland, has been appointed for the third term to serve on the National assay committee, this appointment being made by President Warren G. Harding. Mr. Swasey was first appointed on this committee in 1909 by President Theodore Roosevelt and was reappointed in 1913 by President William H. Taft. The assay committee tests the quality and weight of samples of coins made in the Government mints each year.

Charles M. Foote, for 24 years with the American Tube & Stamping Co., Bridgeport, Conn., latterly as sales manager, has resigned that position to become sales manager of the Columbia Steel Co., Elyria, Ohio,



J. W. HERTZLER

manufacturer of cold-rolled strip steel. Mr. Foote will make his headquarters at the New York offices of the company at 258 Broadway.

At the annual meeting of the Duquesne Steel Foundry Co., Pittsburgh, D. C. Bakewell was elected president; W. E. Hoblitzelle, first vice-president; L. A. Way, second vice-president; B. P. Bakewell, secretary, and E. S. Eggers, treasurer.

Lew L. Harr, vice-president and director, Griston & Knight Mfg. Co., Worcester, Mass., belting, has resigned, effective April 1, for the purpose of devoting his entire time to various interests in China.

The following officers of the Alan Wood Iron & Steel Co. were elected at the annual meeting held on Jan. 25: President, Richard G. Wood; vice-president, Jonathan R. Jones; vice-president, Ledyard Heckscher; vice-president and treasurer, Howard Wood, Jr.; vice-president and assistant treasurer, Alan D. Wood; secretary, John W. Logan; assistant treasurer and assistant secretary, A. Markley Harry; assistant secretary, J. H. Woodhead. On the same day Howard Wood, Jr., was elected president of Upper Merion and Plymouth Railroad Co.

George B. Mitchell has resigned, effective Feb. 1, as assistant sales manager, cold-rolled department, Jones & Laughlin Steel Co., Pittsburgh, to become special sales representative, Wyckoff Drawn Steel Co., Pittsburgh. Mr. Mitchell was associated with the Jones & Laughlin Steel Co. for more than 20 years, rising through various grades in the sales department to the position he has just relinquished. He takes with him to his new affiliation a wide experience in the sale of cold-finished steel products and has an extensive acquaintance in the trade. He is a member of the Duquesne, Union, Pittsburgh Field Club, Pittsburgh Athletic Association, Pittsburgh, and Society of Automotive Engineers of New York.



GEORGE B. MITCHELL

Frank S. Slocum, special representative, Jones & Laughlin Steel Co., Pittsburgh, has gone on a brief vacation in Bermuda.

John Stambaugh, director of the Brier Hill Steel Co., Youngstown, Ohio, leaves this week for a tour of Europe, accompanied by his wife.

M. J. Ward, for the past seven years superintendent of the sheet galvanizing department of the Youngstown Sheet & Tube Co., Youngstown, Ohio, has resigned to accept a position with the Empire Rolling Mill Co., Cleveland. He will install a galvanizing department at the Empire company's plant and take charge following its completion. Mr. Ward was formerly in charge of the galvanizing department of the American Sheet & Tin Plate Co.'s sheet mill plant at Gary, Ind., prior to becoming identified with the Sheet & Tube company.

Howard E. Handy has severed his connection with the Washington Steel & Ordnance Co. as assistant metallurgical superintendent. His temporary address is 773 Elmwood Avenue, Providence, R. I.

Carl F. Deitz, president Bridgeport Brass Co., Bridgeport, Conn., announces a reorganization of the personnel to meet the requirements of a new cost-accounting system. Walter R. Clark has been made general works manager; Arthur Brewer, manager mill costs department; E. R. Feicht is in charge of the engineering and maintenance department; G. E. Oakley, manager fabricating department, and Warren D. Blatz is general sales manager. Mr. Deitz formerly was prominently identified with the Norton Co., Worcester, Mass., abrasives and grinding machinery.



Ralph Leavenworth has returned to the Standard Parts Co., Cleveland, as advertising manager, which position he relinquished some months ago to take up another line of work.

Robert Steinemann has been elected vice-president and general manager of the Tide-Water Corporation, 2 West Fortieth Street, New York, pulverizer of iron. Mr. Steinemann resigns from the National Aniline & Chemical Co., Inc., to take up his new duties. Since Feb. 1 the officers of the company have been as follows: Martyne H. Newman, president; Robert Steinemann, vice-president and general manager; John Hall Jones, secretary and treasurer.

G. M. Ruhf, president and factory manager Exeter Machine Works, Inc., West Pittston, Pa., has resigned.

H. G. Schaeffer, formerly assistant district manager of the Continental Iron & Steel Co., at Chicago has joined the Reliable Iron & Metal Co., dealer in iron, steel and metals, Peoria, Ill. He assumes charge of a new department handling steel on a general brokerage basis.

Rumsey W. Scott, an engineer, has been elected a vice-president of the Chemical National Bank of New York, which in October, 1920, created an industrial department for the purpose of giving technical assistance to credit officers of the bank. Mr. Scott, then Vice-President of the Technical Advisory Corporation, consulting industrial engineers, was appointed manager of the department.

The Ajax Metal Co., Philadelphia, has appointed H. L. Carpenter, Jr., formerly in charge of their Pittsburgh Office and later connected with its main office in Philadelphia, traveling representative in western Pennsylvania.

William J. Cleary has been appointed assistant general sales manager of the Sharon Pressed Steel Co., Sharon, Pa., headquarters at 1214 Dime Bank Building, Detroit. He was identified for 14 years with the automotive industry, most of the time with the Studebaker Corporation as assistant general purchasing agent and for two years as general purchasing agent of the Willys Corporation, with headquarters at Elizabeth, N. J.

W. W. Scott, Jr., formerly manager of sales in St. Louis for Carnegie Steel Co., Illinois Steel Co. and Tennessee Coal, Iron and Railroad Co., has become general manager of sales of the Laclede Steel Co., St. Louis.

T. H. Hays has been appointed manager of the Indianapolis office of the Westinghouse Electric & Mfg. Co. A. E. Hitchner, assistant to the manager, industrial department, in general charge of the mining and electro-chemical industries, until further notice will have general charge of the sections formerly handled by W. H. Patterson, who recently resigned to accept the position of vice-president of the Kaestner & Hecht Co., Chicago, elevator manufacturer.

Charles M. Sullivan has resigned as sales engineer in the Pittsburgh office of Manning, Maxwell & Moore, Inc., to become Cleveland district sales representative for Kaestner & Hecht Co., Chicago, elevator manufacturer, effective Feb. 1. Mr. Sullivan, prior to becoming affiliated with Manning, Maxwell & Moore, Inc., was Pittsburgh district sales manager, Milwaukee Electric Crane & Mfg. Co., Milwaukee. He was graduated from the University of Illinois, with the degree bachelor of science in electrical engineering.

Robert W. Wolcott has been made manager of the New Orleans branch of the Lukens Steel Co., Coatesville, Pa., succeeding the late James W. Porch. Mr. Porch died in July, 1921, after 23 years' service at New Orleans. Mr. Wolcott has been connected with the sales department of Bethlehem Fabricators, Inc., Bethlehem, Pa.

## OBITUARY

### Henry A. Carpenter

HENRY ALDEN CARPENTER, aged 55, of the General Fire Extinguisher Co., Providence, R. I., died at his home Jan. 27. He was born in Providence, July 7,



HENRY A. CARPENTER

1867. In 1889, together with his father and brother, he established the Alva Carpenter & Sons Foundry Co., becoming vice-president and treasurer. The Carpenter company was merged with the General Fire Extinguisher Co. in 1911 and Mr. Carpenter joined the new organization, becoming by successive steps manager of the five foundries of the company, plant manager of the Auburn establishment, member of the executive board, publicity and promotion manager, and a director. He held these offices at the time of his death.

Mr. Carpenter was president of the New England Foundrymen's Association for a number of years. Joining the American Foundrymen's Association in 1896, he was vice-president in 1905 and 1913 to 1916, and was one of the incorporators when the association was incorporated July 3, 1916. Mr. Carpenter was also a member of the National Founders' Association, holding office as vice-president for three years prior to November, 1908, when he became president, succeeding O. P. Briggs. He served as president during 1908-1909.

Always active in city affairs in Providence, he was a member of the city council from 1905 to 1907 and one of the leaders in the Providence Chamber of Commerce, over which he presided in 1917. He was also a director of the Union Trust Co., the Rhode Island Insurance Co. and the Homeopathic Hospital. Mr. Carpenter was prominent in Masonic circles and had held some of the highest offices in the order. He was also a member of the Benevolent and Protective Order of Elks, and among the many clubs, was a member of the Engineers' Club of New York. He was credited with great service in the prevention of fires.

MRS. ELIZABETH COCHRANE SEAMAN, who was president of the Ironclad Mfg. Co. and American Steel Barrel Co., Brooklyn, for a number of years, died Jan. 27. She was born in 1867 and in 1897 married Robert L. Seaman, an aged and wealthy Brooklyn manufacturer, who died in 1904, leaving his entire property, including the two companies, to her. She assumed management of the properties and encountered many difficulties, including much litigation in which she was finally successful. Many years before her marriage, Mrs. Seaman, under the pen name of Nellie Bly, was engaged in newspaper work and became well known on account of a trip around the world which she made in 1889-1890 in 72 days, 6 hours and 11 minutes, to show that Jules Verne's imaginative romance "Around the World in Eighty Days" was not an exaggeration. A few years ago she returned to newspaper work.

HOWARD V. LEWIS, Fitchburg Machine Works, Fitchburg, Mass., died Jan. 26, aged 43. Mr. Lewis was educated at Harvard University, and after leaving college was employed for a number of years by the American Tool Works, Cincinnati. He then became a manufacturer's representative in New York and later, for about a year, was with the Allied Machinery Co., making a trip to Europe. Since November, 1915, he had been with the Fitchburg Machine Works.

WALTER A. COOK, president of the Acme Road Machinery Co., Frankport, N. Y., died, Jan. 23, age 60 years.

## British Iron and Steel Market

General Softening Tendency to Prices—Tin Plate Demand Falling Off—Continental Competition Not Entirely Distanced

(By Cable)

LONDON, ENGLAND, Jan. 31.

There is further improved demand for pig iron, but the business placed is still unimportant. Buyers are disinclined to commit themselves for forward business. The demand for hematite is expanding, but it is still insufficient to absorb the total output, and makers are granting small concessions.

Foreign-ore consumers are showing more interest. Best Bilbao Rubio is being sold at 26s. (\$5.54) ex-ship Tees.

Cammell, Laird & Co., Ltd., and United Steel Companies, Ltd., have secured home rail orders to the amount of 15,000 tons. Vickers, Ltd., has been awarded the contract for electrification of the South African railroads. There is an unconfirmed report to the effect that the international steel rail pool is to be revived.

Scotland is quoting ship plates at £9 (1.71c. per lb.) delivered. Export business generally is quiet.

German merchant bars are being sold at £7 15s. to £8 (1.47 to 1.52c. per lb.) f.o.b., for April and May shipment. Belgian and French merchant bars are held at £8 to £8 5s. (1.52 to 1.545c. per lb.) f.o.b., for April and May delivery. Luxemburg merchant bars are quoted at £7 15s. (1.47c. per lb.) f.o.b., for March and April shipment.

German plates are held at £8 10s. (1.62c. per lb.) f.o.b., for April and May shipment. French plates are being sold at £9 (1.71c. per lb.) f.o.b., for April and May delivery. German structural steel is quoted at

£7 10s. to £7 15s. (1.43 to 1.47c. per lb.) f.o.b., for April and May shipments.

Continental pig iron prices are practically nominal, owing to scarcity of supplies being offered.

American soft wire rods are offered here at £11 12½s. (\$49.02) c.i.f. United Kingdom.

Tin plate demand is slow, and there are further mill stoppages. Some trades are hoping that the makers may agree to a definite restriction of output. It is anticipated that Australian demand will shortly revive.

Galvanized sheets are being sold at £15 15s. (3c. per lb.) f.o.b. Some makers are quoting £15 12½s. (2.97c. per lb.). Rangoon specifications are quoted at £23 10s. (4.47c. per lb.) f.o.b.

Far Eastern specifications for black sheets are being filled at £16 5s. (3.09c. per lb.) f.o.b. Some 24-gage has been sold at £12 15s. (2.42c. per lb.) f.o.b.

We quote per gross ton, except where otherwise stated, f.o.b. maker's works, with American equivalent figured at \$4.26 per £1 as follows:

Durham coke, delivered..	£1 5s. to £1 7s.	\$5.33 to \$5.75
Cleveland No. 1 foundry..	4 15	20.24
Cleveland No. 3 foundry..	4 10	19.17
Cleveland No. 4 foundry..	4 7½	18.64
Cleveland No. 4 forge....	4 10	19.17
Hematite .....	7 0*	29.82*
East Coast mixed.....	4 14 to 4 15	20.03 to 20.24
Ferromanganese .....	15 0 & 14 10*	63.90 & 61.71*
Rails, 60 lb. and up.....	8 0 to 9 10	34.08 to 40.47
Billets .....	7 0 to 7 10	29.82 to 31.95
Sheet and tin plate bars, Welsh .....	7 5 to 7 7½	30.89 to 31.42
Tin plate, base box.....	0 19 to 0 19½	4.05 to 4.16
		C. per Lb.
Ship plates .....	9 0 to 10 10	1.71 to 2.00
Boiler plates .....	12 10 to 14 0	2.38 to 2.66
Tees .....	9 10 to 11 0	1.81 to 2.09
Channels .....	8 15 to 10 5	1.66 to 1.95
Beams .....	8 5 to 10 0	1.57 to 1.90
Round bars, ¾ to 3 in....	10 10	2.00
Galvanized sheets, 24 g..	15 12½ to 16 0	2.97 to 3.04
Black sheets .....	12 15 to 13 0	2.43 to 2.47
Steel hoops .....	12 0 & 12 5*	2.28 & 2.33*
Cold rolled steel strip, 30 g.	24 5	4.61

\*Export price.

## Further Reductions in Pig Iron and Steel—Shipbuilding Outlook Now Promising—Labor Less Exacting

LONDON, ENGLAND, Jan. 11.—General conditions are not bright although the business community has got into a way of telling one another that things are better. In some respects they are, in that iron and steel prices, which have lagged behind the others in the decline, are now gradually coming down to a more economic level. Wage reductions are accepted, if not without demur at least without strikes, and there is a general disposition to help the reconstruction of business in every way practicable.

It is stated that, while there is nothing much to boast about, yet in the shipping position, the outlook is considered to be more promising and the return of optimism seems to be permanent. A good sign is the steady demand for second-hand tonnage. Of course it is realized that during the next year or two British ship owners will have to face severe competition from foreign lines and will be called on to do so at a time when their resources are weakened by war taxation. The merchant tonnage under construction in the United Kingdom at the end of December was 2,640,319 tons or a reduction of 643,000 tons compared with the total at the end of the previous quarter. Of course in order to make a correct comparison with normal times two factors must be remembered, namely, that over 720,000 tons included in the present total, represent ships under construction, though work on them has been suspended; also a number of vessels, the completion of which has been postponed.

Until the last few days business in the Cleveland iron market was more or less under the influence of the holidays, but Cleveland No. 1 and No. 3 foundry irons have been reduced 10s. to £4 15s. and £4 10s. per ton respectively. Meantime No. 4 foundry and No. 4 forge

are down 7s. 6d. to £4 7s. 6d. and £4 2s. 6d. At these lower levels there are fairly strong hopes that more business will develop. In finished materials, steel prices are gradually coming down and getting nearer to the continental level, so that prospects of increased bookings by British works are undoubtedly broadening, largely owing to the fact that they have the advantage of being able to give quick delivery.

Some little time ago it was reported that a large quantity of scrap steel had been sold by this country to Germany. This, however, seems to have been hardly accurate, as in actual fact what was sold to Germany was several warships for breaking up purposes.

It is reported that a new Sheffield company called Industrial Steels, Ltd., has been formed with a capital of £700,000 for the purpose of acquiring from Messrs. Jonas & Colver the Novo works.

Edgar T. Ward's Sons Co., iron and steel merchant, has removed its New York office to its Waverly warehouse, 394 Frelinghuysen Avenue, Newark, N. J. The stock formerly carried in the New York warehouse at 260 West Street is being divided between the Brooklyn warehouse at the foot of Forty-ninth Street, Brooklyn, and the New Jersey establishment. The warehouse at 260 West Street will be closed. To avoid confusion in telephoning, the number Cortlandt 2066 will be connected with the Newark office as well as the former Newark number of Waverly 8700. The Brooklyn warehouse number continues to be Sunset 7520.

In the study of the reduction of iron oxides by methane, being made at the Pacific Station of the U. S. Bureau of Mines, it has been established that, at temperatures up to at least 800 deg. C., methane is a very slow reacting reducing agent as compared with hydrogen or carbon monoxide.



## BOOK REVIEWS

**Fraser's Metal Products Directory.**—Fourth Annual Edition. Pages 312, 6½ by 9 in. Published by the Fraser Publishing Co., Montreal, Canada. Price \$3.

A registry of Canadian manufacturers, wholesale dealers and agents connected with the hardware, metal, foundry, engineering, electrical and machinery industries. Wholesale dealers, merchants and others listed who do not manufacture are indicated by an asterisk before the name. The index is classified alphabetically by the product, and numbered consecutively for greater convenience. The number of the page is shown on the right of the index classifications, which aids materially in locating the list desired.

**Outspinning the Spider, A Story of Wire and Wire Rope.** By John Kimberly Mumford. Pages 137, 6 x 8½, illustrated. New York: Robert L. Stillson Co.

This is the story of the Roebblings. It visualizes the developments which made possible the Brooklyn Bridge, and all of the myriad activities which present day industrialism has called for from the maker of wire and wire rope. Written in an interesting manner, yet giving facts of manufacture and use in an authoritative way, the work carries the reader through the history of development from the earliest phases to the present. It relates in a vivid way the various processes used, the exacting care necessary in the manufacture of wire rope, and some of the multitudinous uses to which the rope is put. One of the most recent was the wire rope barrage laid down in the English Channel during the World War.

## NEW TRADE PUBLICATIONS

**Electric Motor.**—Wagner Electric Mfg. Co., St. Louis. Bulletin No. 129. Contains a description of the Wagner "Pow-R-Full" polyphase motor and numerous illustrations. The bulletin describes how a motor was produced to be cool running; having better bearings; heavier shaft; protected conduit connections, easy to connect and disconnect; silent operation; strength and quality.

**Drop Forgings.**—Union Switch & Signal Co., Swissvale, Pa. A catalog entitled "Forging Ahead." The equipment and capacity of the company is described and typical forgings produced by the Union Switch & Signal Co. are illustrated and sizes and weights given. The booklet is printed on good paper and the illustrations are particularly clear.

**Small Tools.**—Rockford Milling Machine Co., Rockford, Ill. A pamphlet describing the company's line of arbors, collets, cutters, spring chucks, etc. for use on Rockford milling machines. All sizes are given and there are numerous illustrations.

**Electric Cranes.**—Northern Engineering Works, Detroit. A 16-page booklet illustrating Northern cranes operating in power houses, locomotive shops, foundries, car shops, railroad yards and machine shops. There are also detail photographs of electric hoists and hand power cranes. The booklet is called "a pigeon-hole reminder."

**Patching Boiler Settings.**—Quigley Furnace Specialties Co., 26 Cortlandt Street, New York. Bulletin No. 51 describes and illustrates the method of applying successfully boiler setting patches where Hytempite and Carbosand are used.

**Recorders.**—Bristol Co., Waterbury, Conn. Catalog No. 1501, superseding No. 1500 and made to the size standard for the Bristol company's binder. Illustrates and describes the line of recording voltmeters, ammeters and wattmeters made by the company and the various charts for these instruments are illustrated in colors.

**Piston Rings.**—Waterhouse Welding Co., 15 Pelham Street, Boston. Catalog dated Jan. 1, 1922; it illustrates, describes with complete tables, showing the sizes and prices, pistons, rings and pins for various passenger automobiles, trucks, motorcycles and motors. The booklet, which is intended for use as a reference by the buyer, contains blank memoranda pages for notes.

**Heavy Forging Chain.**—American Forge & Machine

Co., Canton, Ohio. A small folder describing a chain for heavy forgings, with drop forged links of chrome vanadium steel, which was perfected by this company for its own use about ten years ago and later sold to forge shops. This is the first advertising of the chain that the manufacturer has attempted.

**Pulverized Coal System.**—Bonnot Co., Canton, Ohio, which mentions it is the exclusive licensee in the United States of the Holbeck system of firing annealing furnaces with pulverized coal. Bulletin 61, with illustrations of annealing ovens equipped with the Holbeck system, covers costs, time saving, elimination of smoke, labor saving, temperature control, elimination of coal storage and simple construction as factors in the system.

**Waste in Power Plant Chimneys.**—Uehling Instrument Co., 71 Broadway, New York. Two bulletins, No. 220, "Magnitude of the Power Plant's Chimney Loss," and No. 221, "Relation Between CO<sub>2</sub> and Money Wasted Up the Chimney," contains a graphic presentation of these problems. Both bulletins are replete with tables, formulas and diagrams.

**Calendar.**—Youngstown Sheet & Tube Co., Youngstown. About 17½-in. by 26-in., printed in colors. On the January sheet is a reproduction of a photograph of Bessemer converters in operation and a table of products and annual capacity of the company. The succeeding sheets are headed with photographs of the ore handling docks at Lake Superior, blast furnace, open hearth furnace, blooming mill, tube mills, a sheet mill, wire mill and the manufacture of forged couplings.

**Calendar.**—Park & Williams, Philadelphia. Carries a photograph of the Swede furnaces, which this company represents. Three months are shown at a time, the current month, the previous and the coming month.

**Cinder Cars.**—Welmer Machine Works Co., Lebanon, Pa. Two folders of six pages each illustrate in full page photographs Edgar A. Welmer's patent cinder cars, styles J and K respectively. Each style is shown tilted in various directions and there is brief description accompanying the illustrations.

**Babbitt Motor Bearings.**—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Circular reprint No. 104. The publication is a discussion of the production of babbitt metal by J. S. Dean, railway motor engineering department, Westinghouse company, and contains a number of photographs of equipments used in the manufacture of babbitt metals as well as the results of various tests of samples of alloys.

## New Books Received

**Essentials of Industrial Costing.** By George S. Armstrong. Pages 297, 5½ x 8½ in.; illustrations 80. Published by D. Appleton & Co., 35 West Thirty-second Street, New York.

**A Life of George Westinghouse.** By Henry G. Prout. Pages xii + 375, 6 x 9 in. Published by Charles Scribner's Sons, 597 Fifth Avenue, New York. Price \$2.50.

**Fraser's Metal Products Directory,** covering all Canada. Fourth Edition. Pages 312, 6 x 9 in. Published by the Fraser Publishing Co., 128 Bleury Street, Montreal, Canada. Price \$3.

**Proceedings of the American Society for Testing Materials.** Vol. 21, 1921. Pages 1197, 6 x 9 in.; 31 committee reports, 24 technical papers, 93 tentative standards. Published by the Society, 1315 Spruce Street, Philadelphia. Price \$10 in paper binding.

**The Modern Gas Tractor.** By Victor W. Page. Pages 574, 4¼ x 7¼ in. illustrations 265. Published by the Norman W. Henley Publishing Co., 2 West Forty-fifth Street, New York. Price \$3.00.

**The Blacksmith's Pocket Book.** By Tom Wormald. Pages 84, 4¼ x 7¼ in. Published by Scott, Greenwood & Son, 8 Broadway, Ludgate, London, E. C. 4, England. For sale by D. Van Nostrand Co., 8 Warren Street, New York.

**The Ship Compendium and Year Book 1922.** Pages 1008, 8½ x 11 in. 8 maps and 800 sections containing names and addresses of 30,000 firms interested in ship and shipping. Published by Compendium, Ltd., 18 Old Compton Street, London, W. 1, England.

**Le Sciage des Metaux.** By C. Codron. Pages 463, 9 x 11 in. illustrations 536. Published by Dunod, 47 Quai des Grands-Augustins, Paris (VI), France.

## IRON AND INDUSTRIAL STOCKS

### Selling of Steel Shares on Merger Talk Noted the Past Week

Indications the past week were that at least some people, who previously bought shares of those steel properties concerned in proposed mergers, sold their holdings because it was talked about the financial districts that these mergers would not materialize, the parties interested not being able to agree on various details. Such selling, coupled with earnings reports by the larger steel companies showing deficits, has resulted in a lower range of prices. All things considered, however, values of iron and steel shares hold up remarkably well, which bespeaks confidence in the future rather than conditions which have passed.

The range of prices on active iron and industrial stocks from Monday of last week to Monday of this week was as follows:

Allis-Chal. com. . . . . 41 - 44 1/2	Midvale Steel . . . . . 29 1/2 - 32
Allis-Chal. pf. . . . . 90 - 91 1/2	Nat.-Acme . . . . . - 12 1/4
Am. Can. com. . . . . 33 3/4 - 38	Nat. E. & S. com. . . . . 35 1/2 - 36 3/4
Am. Can. pf. . . . . 95 1/2 - 96 3/4	Nat. E. & S. pf. . . . . 85 - 88 1/2
Am. C. & F. com. . . . . 145 - 147	N. Y. Air Brake . . . . . - 58 1/4
Am. C. & F. pf. . . . . 117 1/4 - 118 1/4	Nova Scotia Steel . . . . . 25 - 27
Am. Loco. com. . . . . 104 1/4 - 108 1/4	Press. Steel com. . . . . 63 3/4 - 65
Am. Loco. pf. . . . . 114 - 114 1/2	Ry. S. Spg. com. . . . . 95 1/4 - 98
Am. Rad. com. . . . . - 83	Ry. S. Spg. pf. . . . . 108 1/4 - 110 1/4
Am. Std. F. com. . . . . 30 3/4 - 33 3/4	Replogle Steel . . . . . 30 - 33 3/4
Am. Std. F. pf. . . . . 94 - 94 1/2	Republic com. . . . . 49 3/4 - 55 1/4
Bald. Loco. com. . . . . 94 3/4 - 97 3/4	Republic pf. . . . . 84 1/2 - 87 1/2
Bald. Loco. pf. . . . . - 106	Sloss com. . . . . 40 - 42
Beth. Steel com. . . . . 55 - 57	Sloss pf. . . . . - 77
Beth. Std. Cl. B. . . . . 59 - 61 3/4	Superior Steel . . . . . - 30
Beth. Std. 8% pf. . . . . 107 1/4 - 108	Trans.-Williams . . . . . - 33
Colorado Fuel . . . . . 26 - 27 1/4	Un. Alloy Steel. . . . . 26 1/4 - 27 1/2
Cruc. Steel com. . . . . 59 3/4 - 64	U. S. Pipe com. . . . . 18 1/2 - 21
Cruc. Steel pf. . . . . 81 - 82	U. S. Pipe pf. . . . . 57 - 60 1/4
General Elec. . . . . 141 - 144 1/4	U. S. Steel com. . . . . 85 1/4 - 86 1/2
Gt. No. Ore Cert. . . . . 31 3/4 - 32	U. S. Steel pf. . . . . 116 3/4 - 117
Gulf States Steel . . . . . 64 - 78 3/4	Vanadium Steel. . . . . 33 - 35 3/4
Int. Har. com. . . . . 81 1/4 - 83 1/4	Va. I. C. & C. . . . . 78 - 87 1/2
Int. Har. pf. . . . . - 106 1/4	Westhouse Elec. . . . . 50 3/4 - 51 3/4
Lack. Steel . . . . . 45 1/2 - 48 3/4	

### Industrial Finances

The preliminary statement of Virginia Iron, Coal & Coke Co. for year ended Dec. 31, 1921, shows net earnings after interest and taxes of \$423,889. Inventory adjustments for the year have yet to be made, and estimates of their effect on earnings are not yet available.

At the directors' meeting it was decided to omit the dividend of 1% per cent on the cumulative preferred stock of the Taylor-Wharton Iron & Steel Co.

The annual report of W. A. Layman, President Wagner Electric Mfg. Co., St. Louis, shows that the bank and broker obligations reached their maximum on Jan. 15, 1921, at \$6,050,000 and were reduced approximately \$2,000,000 or 33 1/3 per cent, to \$4,027,950 on Nov. 15 last. The total obligations on January 1, 1921, were \$7,139,283, which was reduced to \$4,277,950 on Nov. 15. Mr. Layman was re-elected president, and Paul Brown, a director, was elected first vice-president to succeed Walter Robbins, who resigned last July.

The receivership of the Fulton Motors Corporation, 34 Pine Street, New York, operative since 1919, has been terminated, and the property returned to the company. All obligations have been paid.

Attorneys for stockholders of Pusey & Jones, Wilmington, Del., with shipbuilding plants at Wilmington and Gloucester City, N. J., have filed a petition in the United States District Court at Wilmington asking that the bankruptcy proceedings against the company be dismissed.

A petition in bankruptcy has been filed against the Brooklyn Alloys Co., 15 Fulton Street, Brooklyn, by a number of creditors. Louis J. Castellano has been appointed receiver.

The Large-Baker Corporation, Phoenix, N. Y., manufacturers of couplings, etc., has filed an involuntary petition in bankruptcy.

The Collins Co., Collinsville, Conn., edge tools, recently declared a quarterly dividend of 2 per cent. The company heretofore paid at the rate of 16 per cent on its stock. Sales are about one-third the company's capacity.

During the three months ending Dec. 31 the Virginia Iron, Coal & Coke Co., after interest and taxes, but before inventory adjustments, operated at a net loss of \$71,698, contrasted with a profit of \$834,108 in the last three months of 1920. Net earnings for 1921 were \$423,889 after taxes and interest, whereas in 1920 they were \$3,263,026. The directors have declared a stock dividend of 50 per cent, payable in 5 per cent cumulative preferred stock on Feb. 15 to common shareholders of record Feb. 1.

Sidney E. Phillips, Spencer Turbine Co., Hartford, Conn., has been made receiver for the Connecticut Blower Co., that city, to succeed William A. Foley, temporary receiver. The plant, which was closed, is to resume operations.

Net sales of the J. I. Case Plow Works Co. for the 15 months ending Sept. 30 last were \$4,728,557; operating expenses, inventory adjustment, etc., \$7,396,520; the operating loss, \$2,667,963, and the net loss for the period, \$2,985,791.

The Michigan Securities Commission has authorized the sale of \$791,000 of stock in the new Iron Mountain Mining & Furnace Co., which is to make charcoal iron at Iron Mountain, Mich. The project is backed by the Cleveland-Crofts Iron Co.

The Michigan Securities Commission has authorized the sale of \$500,000 of stock in the Cyclone Motors Co., Benton Harbor, Mich. The company is headed by J. N. Eaton, formerly of the Lincoln Motors Co., Detroit. The proceeds of the stock sale are to be used in extending the operations of the company, which manufactures motorcycles.

Owing to the demand for foundry sand, the volume of business of the Portage Silica Co., Youngstown, Ohio, this month is double the rate of January, 1921. Last year business was at an average rate of 55 per cent of capacity. Shareholders were informed at the annual meeting Jan. 24. Joseph G. Butler, Jr. was elected president and treasurer of the company; E. E. Klooz, first vice-president and general manager; J. B. Chambers, second vice-president and Lee R. Farrell, secretary and manager of sales.

Business of the Youngstown Foundry & Machine Co., Youngstown, Ohio, averaged 35 per cent of capacity in 1921. Shareholders were told Jan. 24 at the yearly meeting. The company produces chilled, sand and semi-steel rolls, iron castings, rolling mill machinery, ingot cars, roll lathes, shears and the like. Directors were re-elected.

The Brier Hill Steel Co., Youngstown, Ohio has declared the regular quarterly preferred dividend of \$1.75 per share, payable April 1 to holders of record March 20.

The Otis Steel Co., Cleveland, reports for the first three quarters of 1921 a net loss of \$1,214,550 after charges but before depreciation. Its net operating loss was \$924,187, and other income \$68,983. The company's income charges amounted to \$297,464, and its subsidiary companies' losses to \$61,882. Preferred dividends of \$309,071 were declared by the company, making its final deficit for the year \$1,523,621.

### Earnings of Bethlehem Steel Corporation

The Bethlehem Steel Corporation had gross sales and earnings of \$147,794,352 in 1921, as compared with \$274,431,236 for 1920. After deducting manufacturing cost and operating expenses there was a net manufacturing profit of \$21,850,533, as compared with \$34,962,371 in 1920.

Other income amounted to \$3,904,144, making total net earnings \$25,754,677. After deducting for interest, discount, depreciation and depletion and expense of bond and note issues applicable to subsequent years, there was left a balance of \$8,028,803.

President Grace said the net income of \$8,028,803 represented an earning of 7.6 per cent on the \$60,000,000 common stock, after payment of \$3,450,000 for preferred dividends. These earnings, he said, were largely from orders on the books at the beginning of the year, carried over from the war and the subsequent period of prosperity.

The year 1921, he said, was one of the worst ever experienced by the modern steel industry. On Dec. 31 last orders on hand amounted to only \$50,164,000, while at the end of 1920 booked orders were \$145,287,000. Business booked last year was \$52,672,000.

Mr. Grace said, however, that the corporation's current assets were \$89,636,875 more than current liabilities, whereas a year ago the excess had been \$77,474,000. Cash and liquid securities, largely United States Treasury obligations, amounted to \$54,881,227 on Dec. 31, 1921, compared with \$20,078,788 on the same date in 1920.

Value of all inventories at the end of the year was \$41,115,700, compared with \$73,208,678 at the close of 1920. Allowance for depreciation and depletion during the year was \$6,902,715. Total allowance for depreciation, depletion and amortization made out of earnings from 1916 to 1920, inclusive, was \$90,300,000 and adequately provided for the elimination from the corporation's plant values of its entire investment in ordnance plants made subsequent to 1914, as well as the excess cost of commercial plants constructed during the war period. Of a property account of \$335,000,000, less than \$8,000,000 is now represented by investment in ordnance works.

The directors declared the regular dividends on both classes of preferred stocks for the entire year 1922. The



Regular quarterly dividend of 1¼ per cent was declared on common stock, payable April 1 to stock of record March 14.

### Gulf States Deficit

Net operating income of Gulf States Steel Co. for quarter ended Dec. 31, 1921, was \$74,610, after deductions for taxes, depreciation and other charges, there was a deficit of \$11,937. After depreciation and taxes, and after marking down inventories as of Dec. 31, to the market, the deficit for the quarter 1921 was \$467,662.

### Inland Makes Excellent Showing in 1921

Whereas most of the large independent steel manufacturers suffered heavy losses during the year 1921, the Inland Steel Co., Chicago, with plants at Indiana Harbor, Ind., and Chicago Heights, Ill., made net earnings after deducting charges for repairs and maintenance, inventory adjustment and reserve for taxes, of \$1,728,031. Allowance for depreciation of plants, provision for exhaustion of minerals, and deduction for bond interest, left net profits of \$510,727. This is regarded as a remarkable record in view of the long-continued depression in the steel industry which forced prices to a low level and permitted only partial operation of plant facilities. The company is prominently mentioned as a probable unit in the proposed merger of independent steel mills. The statement of earnings and condensed balance sheet follow:

Statement of earnings.	
Year ending Dec. 31, 1921.	
Net earnings from operations.....	\$1,728,031.07
Less—	
Provision for depreciation of plants .....	\$877,059.00
Provision for exhaustion of minerals .....	34,934.29
Bond interest .....	305,310.00
	1,217,303.29
Net profits for year.....	\$510,727.78
Add previous surplus.....	18,708,681.69
	\$19,219,409.47
Deduct—	
Dividends paid .....	1,013,964.00
Final surplus .....	\$18,205,445.47
Condensed balance sheet.	
Dec. 31, 1921.	
Assets	
Capital assets—	
Land, plants and buildings.....	\$45,220,987.17
Current assets .....	15,009,797.75
Deferred charges—	
Advance royalty on ore, etc.....	318,642.85
	\$60,549,427.77
Liabilities	
Capital liabilities—	
Capital stock .....	\$25,331,475.00
Bonded debt .....	4,961,000.00
	30,292,475.00
Current liabilities—	
Accounts payable .....	709,496.06
Current payrolls .....	225,321.69
General taxes accrued.....	407,192.21
	1,342,009.96
Interest accrued on bonded debt.....	15,750.00
Reserves .....	10,693,747.34
Surplus .....	18,205,445.47
	\$60,549,427.77

The Lincoln Steel Co., 112-118 North May Street, Chicago, has been appointed by the Pittsburgh Cold Rolled Steel Co., Verona, Pa., to act as its agent in the Chicago district in the sale of cold rolled strip steel, flat wire, etc.

The Holden Co., of Toronto, Montreal, Winnipeg and Vancouver, announced that it has assumed control of the Canadian Brake Shoe Co., Sherbrooke, Que. All business pertaining to the latter company will be transacted at the head office of the Holden Company, 354 St. James Street, Montreal.

### Trade Changes

The Doullut & Williams Co., Inc., engineer and general contractor, New Orleans, announces the reorganization, consolidation and incorporation under the above title, with a capitalization of \$1,000,000, of the following companies and their various interests: Doullut & Williams, Inc., Southern Lighterage & Wrecking Co., Inc., Shell Beach Land & Improvement Co., Inc., with the increased capitalization and enlarged organization, the new company will continue to carry on the different operations previously handled by the above named companies. It will extend its operations to various kinds of construction.

The Alfred O. Blaich Co., manufacturer of Blaich modern carbonizers, announce removal from Chicago to its new plant at 555 Beaufait St., Detroit.

Mutually satisfactory arrangements have been made between the Combustion Engineering Corporation and the George J. Hagan Co., Pittsburgh, whereby the Hagan company discontinues representation of the Combustion Engineering Corporation. The Combustion Engineering Corporation has opened its own office in the First National Bank Building, Pittsburgh, and will soon open an office in Cleveland, both of which will be in charge of W. C. Stripe, former manager of the Philadelphia office. The George J. Hagan Company will retain the exclusive agency for the type "H" stoker formerly known as the American stoker, for use in Hagan industrial furnaces.

The Fisher Tool & Supply Co., Detroit, has removed from 451 East Jefferson Avenue to 45 East Baltimore Avenue.

The Pressed Steel Car Co. and Western Steel Car & Foundry Co. have discontinued their Washington office, effective Feb. 1. L. O. Cameron, who has been a representative of these companies in the Southern territory for many years, has severed his connections with the companies, but will continue his office in the Munsey Building to handle other accounts.

The Cray Machine Co., Benton Harbor, Mich., has changed its name to the Vilco Machine Co.

The sales and engineering departments of the New England Structural Co., 11th floor, 110 State St., Boston, as of Feb. 1, will be consolidated with the general offices of the company at its Everett, Mass. plant. No departure from the established methods of operation are contemplated by the company.

The Skinner Engine Co., Erie Pa., has placed its account for the Pittsburgh district in the hands of the Andrews-Bradshaw Co., 812 B. F. Jones Building, Pittsburgh.

The name of the Brown-McDonald Machinery Co., St. Louis, has been changed to Brown Machinery Co.

The Dominion Asbestos & Rubber Corporation, now located at 154 Nassau Street, New York, will move its executive offices to more commodious quarters at 1780-82 Broadway. It will retain its present store and shipping office at 67 Murray Street, for the convenience of its marine and industrial patrons, but will remove its stock of automotive equipment lines to its new address.

The Robert Gordon Co., Chicago, has moved from 624 Monroe Street to 1355 W. Washington Street.

The Dayton-Dowd Co., manufacturer of centrifugal pumps, Quincy, Ill., has opened a district office in Pittsburgh at 809 Keenan Building, covering the sale of centrifugal pumps and underwriters' fire pumps. The office will be in charge of T. J. Barry, who for the past several years has been with the home office on engineering and sales.

The Morley Machinery Corporation (successor to the W. A. Wilson Machine Co. and the Rochester Boiler Works), manufacturer of iron planers and special machinery, is now located in the plant formerly occupied by the Defiance Check Writer Corporation, 792-814 St. Paul Street, Rochester, N. Y. New equipment has been purchased. The new property has a railroad siding.

The Stow Flexible Shaft Co., manufacturer of portable drilling and grinding machines and flexible shafts, has moved to its new plant at 3452 Ludlow Street, Philadelphia.

Reports to the U. S. Geological Survey indicate a very large decrease in the output of chemical lime in 1921, due to the decline and depression in the metallurgical and chemical industries. The production of dead-burned dolomite, which has replaced calcined magnesite for use in patching and lining basic open-hearth furnaces, decreased from 316,000 tons in 1920 to 140,000 tons in 1921. Decreases of 25 to 65 per cent were reported for the plants that produce dead-burned dolomite. Decreases were also reported by plants that manufacture lime for use by paper mills, sugar factories, alkali works, carbide plants, and other chemical industries.

British coal competes with American in the West Indies and South and Central America, according to the Department of Commerce, because of a 46 per cent reduction in British miners' wages, while American miners still get war-time wages; a cut of 12½ per cent in coal rates on British railroads and a reduction of 25 per cent in British dock charges. In the three chief coal fields of Britain the average weekly wage of coal heavers is now reported at 57s. 4d. (\$12.04 at \$4.20 per £1). American coal has a great advantage in the use of machinery, 59 per cent of the 1919 product having been machine-mined, compared with 12.8 per cent of the British 1920 output.

# Machinery Markets and News of the Works

## MORE LARGE ORDERS

### Automobile and Parts Manufacturers Are Buyers of Shop Equipment

#### Improvement in Machine-Tool Business Noted in Many of the Leading Centers

Though there are still many dull spots in the machine-tool trade, a trend toward improvement in business is noticeable. Orders recently placed by automobile manufacturers have created a much more hopeful feeling. A Cincinnati manufacturer received an order for 40 machines and an Eastern maker of grinding machines has booked an order for 25. A manufacturer of universal joints in Indiana has bought 20 small manufacturing lathes and three turret lathes.

In every market, with the possible exception of New York, there are some evidences of betterment. A Chicago dealer reports that if succeeding months of 1922 are as good as January, he will, at least, be able to conduct his business without loss. Cincinnati manufacturers of tools report an improvement over the pre-

vious week, though inquiries are mostly for single machines. New England business for January is reported to be well above that of December and fully 30 inquiries are pending, some for single tools, but a few running into larger quantities. A Westfield, Mass., manufacturer of heating equipment is in the market for about \$25,000 worth of tools for an experimental shop.

The Zigler Mfg. Co., Alexander, Ind., is inquiring for about a dozen tools. The Cleveland Board of Education is asking bids on six wood-working machines and two metal-working tools.

A new company in New England which contemplates entering into the manufacture of power plant equipment may close this week on a fairly large list of tools.

Railroad buying has dropped off, the theory being that the carriers are awaiting results of the freight rate hearings now being conducted by the Interstate Commerce Commission. The Maine Central is inquiring for a driving wheel lathe and two other tools.

About 115 used tools were sold last week by the Standard Parts Co., Cleveland. Most of the tools were sold to dealers, and the prices paid were very low.

## New York

NEW YORK, Jan. 31.

Judging by reports which machine-tool selling representatives in New York are receiving from their home offices there has been some improvement in machine-tool orders throughout the country, but apparently this improvement is more marked in other districts than the New York territory. Most of the large companies in the East which ordinarily are the most active buyers of machine tools are still pursuing a cautious policy. Such orders as are being received come more frequently from the smaller manufacturers. Demand for used tools is fairly active, and there is a slightly better demand for new machines, but inquiries are almost entirely for single tools.

Although sales of cranes are not numerous, a few good inquiries have appeared in the market the past week and there are prospects of greater activity next month. An old list, issued several months ago, by the American Brake Shoe & Foundry Co., New York, calling for 12 electric cranes ranging up to 7½-ton capacity, has appeared again for new prices. This company is submitting bids for the cast iron segments for the New York-New Jersey vehicular tunnel and the cranes will be purchased provided this contract is obtained. The Electric Bond & Share Co., 71 Broadway, New York, has inquired for a 40-ton, one-motor, overhead traveling crane for a power house in Pennsylvania. A hand-power crane inquiry from the General Engineering & Management Association, 141 Broadway, New York, calls for bids on a 5-ton, 31-ft. 6-in. crane, which will probably be shipped to a point in Texas. The Third Avenue Railway System, 2396 Third Avenue, New York, is receiving bids on a 2-ton, 42-ft. span, 3-motor, overhead traveling crane. The American Locomotive Co., 30 Church Street, New York, is in the market for a 3-ton electric hoist.

Among recent crane sales were: Chesapeake Iron Works, a 5-ton, 13-ft. span, single I-beam crane to the American Sugar Refining Co., for its Baltimore plant; Roeper Crane & Hoist Works, a 5-ton electric hoist to the Ransome Concrete Machinery Co., Dunellen, N. J.; Northern Engineering Works, a 25-ton, 36-ft. span, overhead traveling crane to the W. S. Barstow Co., 50 Pearl Street, New York, for the Pennsylvania Edison Co., Reading, Pa.

The Cook Spring Co., which for a quarter of a century has been manufacturing springs for mechanical purposes in New York City, has completed a new and thoroughly equipped plant for the same purpose at Ann Arbor, Mich. During

recent years the center of the company's trade has moved steadily westward, and the Ann Arbor plant is nearer its trade center. The Eastern plant and office have been closed and dismantled.

The Superintendent of Lighthouses, Staten Island, N. Y., will take bids until Feb. 14 for two 30-hp., vertical double-cylinder air compressors, with twin air cylinders, oil engine driven.

The New York Edison Co., Irving Place and Fifteenth Street, New York, will soon take bids for the superstructure of its new one-story power house, 50 x 100 ft., at Park Avenue and 188th Street, estimated to cost about \$75,000. It has filed plans for a two-story power house, 25 x 103 ft., at 122 East Thirteenth Street, estimated to cost a like amount. William Whitehill, Forty-first Street and Sixth Avenue, is architect for both structures.

Fire, Jan. 26, destroyed a number of shops at the plant of the Morse Dry Dock & Repair Co., foot of Fifty-sixth Street, Brooklyn, including boiler shop, tool and pipe shop and company garage, with loss estimated at about \$200,000, including buildings and equipment. Edward P. Morse is president.

F. M. Schildwachter, 4130 Park Avenue, New York, is having plans completed for a four-story ice-manufacturing plant, 75 x 110 ft., on Webster Avenue, to cost about \$1,000,000 with machinery. William H. Meyer, 1861 Carter Avenue, is architect.

Gen. Franklin W. Ward, secretary to the State Board of Armory Commissioners, 158 State Street, Albany, N. Y., will take bids until Feb. 8 for a quantity of metal lockers.

The Acme Lighting Fixture Co., 132 West Fourteenth Street, New York, manufacturer of electric lighting and gas fixtures, has leased the entire six-story building, 40 x 100 ft., at 107-9 West Thirteenth Street for headquarters.

The Village Council, Rockville Center, L. I., is planning for extensions and improvements in the municipal electric light and power plant to cost about \$60,000.

The Janusch Mfg. Co., 282 East 135th Street, New York, manufacturer of brass goods, has inquiries out for a number of lathes and a screw press.

Fire, Jan. 23, destroyed the power house of the National Light & Power Co., Port Washington, L. I., with loss estimated at close to \$50,000. It will be rebuilt.

Albert Kellar, 1744 Garfield Street, New York, will take bids at once for a one-story cold storage plant at 409-15 East 108th Street, estimated to cost about \$35,000. A. Luprian, 705 Ninety-sixth Street, Woodhaven, L. I., is architect.



The William Bayley Co., 110 West Fortieth Street, New York, manufacturer of steel sash, etc., has purchased four city lots at Van Alst Avenue and Seventh Street, Long Island City, for new works. Plans will be drawn at an early date.

The Christian Feigenspan Co., 50 Freeman Street, Newark, N. J., will commence the immediate erection of a one-story ice-manufacturing plant at 71-85 Bishop Street, Jersey City, N. J., estimated to cost about \$50,000.

The Ingram Motor Co., 2 Rector Street, New York, Joseph Ingram, president, will build a one-story foundry in connection with its new automobile plant at Egg Harbor City, N. J. H. B. Perry is engineer.

A one-story power house will be erected by the Bogota Paper & Board Co., Bogota, N. J., in connection with a one-story addition, estimated to cost about \$40,000. The Austin Co., 217 Broadway, New York, is the contractor.

A vocational department will be installed in the new high school to be erected at Swedesboro, N. J., plans for which have been completed. Bids for construction are being taken until Feb. 6. Simon & Simon, 249 South Juniper Street, Philadelphia, are architects.

Motors, power and other mechanical equipment will be installed in the new plant to be erected by the Cumberland Glass Mfg. Co., Bridgeton, N. J., estimated to cost \$1,750,000. Keeley Brothers, Brighton, have the building contract.

John Keavey, 375 Palisade Avenue, West Hoboken, N. J., will take bids at once for a one-story automobile repair and service building, 75 x 100 ft., at Palisade Avenue and Maline Street, estimated to cost about \$50,000. McDermott & Binda, 582 Bergenline Avenue, are architects.

The Fords Porcelain Works, Lehigh Avenue, Perth Amboy, N. J., has been incorporated as the Fords Porcelain Works, Inc., with capital of \$1,000,000, to manufacture wash basins, sinks, lavatories, etc. It will operate two plants at Perth Amboy and one at Fords, near Perth Amboy. Abel Hansen is president.

Grinding mills, motors and other mechanical equipment will be installed in the new plant to be erected by the Orbis Products Trading Co., Wyckoff Avenue, Brooklyn, at Newark, N. J., occupying about 4 acres, recently purchased. It specializes in the production of essential oils. Plans will be completed at an early date.

The Department of Parks and Public Property, City Hall, Newark, N. J., is arranging for the erection of a new power plant to cost about \$150,000, in connection with the municipal market building, now in course of construction. Frank Grad, 245 Springfield Avenue, is architect.

A vocational department will be installed in the new two-story high school to be erected by the Board of Education, Hightstown, N. J., estimated to cost \$150,000. Guilbert & Betelle, 546 Broad Street, Newark, architects, will prepare plans.

## Philadelphia

PHILADELPHIA, JAN. 30.

E. J. McAleer & Co., 1422 North Eighth Street, Philadelphia, manufacturers of tinware, metal products, etc., have awarded contract to the A. Raymond Raff Construction Co., 1835 Thompson Street, for an addition to cost about \$60,000.

The Moore & White Co., 2701-31 North Fifteenth Street, Philadelphia, manufacturer of friction clutches, machine products, etc., has awarded contract to Clarence W. MacDowell, 2118-20 Diamond Street, for a new foundry, estimated to cost \$33,000.

George W. Lindley, 5122 Wakefield Street, Philadelphia, operating a general machine works, has awarded contract to John P. Frith, 5817 Osceola Street, for a three-story addition 32 x 102 ft., estimated to cost \$20,000.

The Philadelphia & West Chester Traction Co., Sixty-ninth Street Terminal, Philadelphia, will make extensions and improvements in its signal system and other mechanical departments to cost about \$75,000.

A one-story power house, 30 x 63 ft., will be constructed by the Ferris Shoe Co., Monmouth and Juniper streets, Philadelphia, in connection with its new five-story factory at Sixth and Duncannon streets. Plans are being prepared.

The Philadelphia Electric Co., Tenth and Chestnut streets, Philadelphia, is arranging for the sale of a bond issue for \$4,000,000, to be used in part for enlargements at its generating plant, including the installation of new equipment, and other extensions.

The S. V. Reeves Stove & Foundry Co., Twenty-second and Hayden streets, Camden, N. J., will soon break ground for a new two-story plant, 40 x 40 ft. S. V. Reeves is head.

The Norton Mfg. Co., Merchantville, N. J., manufacturer

of metal products, William Hinck, local representative, has awarded contract to M. T. James, Merchantville, for a new one-story factory, 60 x 175 ft.

The New Jersey State Highway Department, Trenton, N. J., has awarded contract to the Austin Co., Bulletin Building, Philadelphia, for its one-story automobile repair and service works at Fernwood, N. J., 106 x 400 ft., estimated to cost \$95,000. R. J. Wasser, Broad Street Bank Building, Trenton, is engineer.

George A. Swartz, York, Pa., and associates, have acquired the plant of the Pullman Automatic Ventilator Mfg. Co., York, and will use the structure for a similar line of production.

The Anthracite Brick & Tile Corporation, Wilkes-Barre, Pa., recently organized in Delaware with capital of \$255,000, has taken over the properties of the Keystone Clay Co., Wyoming, Pa., and plans for extensive operations for the manufacture of brick, tile, etc. It is represented by the Corporation Trust Co. of America, du Pont Building, Wilmington, Del.

A vocational department will be installed in the new high school to be erected at Barnsboro, Pa., plans for which are being prepared by Hirsh & Sheller, Commerce Building, Altoona, Pa., architects. Bids will be asked in the spring.

The Lehigh Coal & Navigation Co., Lansford, Pa., has construction under way on a new coal breaker at Coaldale, estimated to cost close to \$1,000,000 with machinery.

The Du Roth Steel Truck & Car Wheel Co., Granite City, Pa., has commenced the erection of a new plant to manufacture car-wheels and trucks under a new process. E. L. Du Roth heads the company.

A vocational department will be installed in the new high school to be erected at Easton Pa. Bonds for \$1,000,000 were provided some time ago, but the project has been held in abeyance. Plans will be prepared in the near future.

The Royersford Needle Works, Royersford, Pa., will commence the immediate erection of a two-story addition, 50 x 150 ft., with extension, 25 x 32 ft., estimated to cost about \$25,000.

The Floyd-Wells Co., Royersford, Pa., manufacturer of stoves, ranges, etc., has completed foundations for a two-story addition, 32 x 120 ft., and will commence work on the superstructure at once. A. S. Kepner, 121 Hanover Street, Pottstown, Pa., is architect.

A vocational department will be installed in the new two-story and basement high school to be erected at Monessen, Pa., 135 x 200 ft., estimated to cost about \$300,000. J. M. Beall & Sons, Monessen, are architects.

Fire, Jan. 25, destroyed a portion of the smith shop at the plant of the American Car & Foundry Co., Berwick, Pa., with considerable loss. An estimate of the damage has not been announced.

A cold storage plant will be installed by the Franklin Brewing Co., Wilkes-Barre, Pa., in connection with its two-story addition, estimated to cost about \$25,000. Schmitt & Schroeder, Weitzenkern Building, are architects.

The Kolb Baking Co., Tenth and Reed streets, Philadelphia, has taken bids for the erection of a one-story automobile service and repair building, 125 x 260 ft., at Broad and Greene streets, to cost \$60,000. H. B. Weldon, 10 South Eighteenth Street, is architect.

## Buffalo

BUFFALO, JAN. 30.

The Board of Education, Buffalo, is having plans prepared for remodeling of a three-story building, 65 x 150 ft., at Georgia and Front streets, for a new vocational school, and will call for bids in February. H. L. Beck, Municipal Building, is architect.

The Artizan Factories, Inc., North Tonawanda, N. Y., recently organized to manufacture metal products, with capital of \$100,000, has acquired about two acres of land near Division Street as a site for a new plant. Plans will be prepared at once.

Acer & Wheadon, Commercial Street, Medina, N. Y., manufacturer of sheet metal products, are arranging for the erection of a one-story addition, 85 x 100 ft., to double the present capacity.

A vocational school will be erected by the Board of Education, Rochester, N. Y., in connection with the new three-story high school, 345 x 450 ft., at Hudson Avenue and Norton Street, estimated to cost about \$4,000,000. It will include machine shop, foundry, automobile shop, etc. Work will commence at once. E. S. Gordon, 125 Sibley Building, is architect.

The vocational department, chemical laboratory and other portions of the high school at Pine Avenue and Portage Road, Niagara Falls, N. Y., were destroyed by fire, Jan. 24, with loss estimated at \$500,000, of which about \$100,000 represents equipment. The Board of Education will prepare plans for rebuilding the structure.

The Morely Machinery Co., Rochester, N. Y., comprising a merger of the W. A. Wilson Machine Co. and the Rochester Boiler Works, has acquired a plant at 792 St. Paul Street, formerly occupied by the Defiance Check Writer Corporation, and will manufacture planers, special machinery and parts.

The Board of Supervisors, Buffalo, has authorized Thomas H. McElvein, County purchasing agent, to purchase a new steam roller for road work. Bids will be called at once. Machinery for a municipal asphalt plant will be purchased at the same time. An appropriation of \$30,000 has been made for the plant.

## Chicago

CHICAGO, Jan. 30.

January proved a better month for local houses than December. One dealer, in fact, states that if business is as good during the succeeding months of 1922, he will be able to keep red figures out of his books. Current buying is principally confined to individual machines and a good proportion of current orders is for second hand equipment. Notable among orders recently placed may be mentioned three used 24-in. boring mills, one new 42-in. boring mill, two new 72-in. gear cutters, and one new 22-in. x 10-ft. engine lathe. Business is coming from miscellaneous sources and while no one class of consumers stands out prominently, it is to be noted that automobile accessory manufacturers seem to have taken a new lease on life and are placing some orders for machine tools and supplies. As a whole, pending railroad lists are still held in abeyance. The Santa Fe, however, has placed orders for a large boring mill, an axle lathe and a steam hammer, and has put out an inquiry for three motor-driven internal and external tool post grinders. The American Steel Foundries is in the market for a No. 1½ Cincinnati cutter and tool grinder.

The Consumers Power Co., Jackson, Mich., has bought a 20-ton overhead electric traveling crane for its Roger dam plant near Grand Rapids.

The Cicero-Chicago Corrugated Co., 1542 South Fifty-first Court, Cicero, Ill., has let a contract for the reconstruction of its one-story plant, 130 x 130 ft.

The Vienna Model Bakery Co., 1040 Vern Park Place, Chicago, is receiving bids on a three-story plant, 121 x 140 ft., to cost \$150,000.

The municipal commission, Hibbing, Minn., is considering plans and specifications for an addition to its light and water plant to cost \$150,000.

E. W. Ferrel has opened a machine shop at 225 West Main Street, Robinson, Ill. He will specialize on small machine and automobile parts.

The Gray Iron Foundry Co. and the Alamo Heating Co., Muskegon, Mich., have merged under the name of the Gray Iron Foundry & Furnace Co. E. L. Meier will be president and the other officers have not yet been named.

The American Parts Corporation, Toluca, Ill., was recently incorporated with \$250,000 capital stock to take over the assets and properties of the Automotive Radiator Corporation and several other smaller plants. It is now constructing a plant, 135 x 480 ft., and expects to purchase stamping machinery and presses, sheet metal tools and a general line of machine shop equipment. The company is at present manufacturing automobile radiators both for replacement and for the equipment of all makes of cars, and is also producing various other mechanical and metallic parts for automobiles. The officers are Phil F. Sperry, president; John W. Schult, treasurer; and George G. Anderson, secretary. The Chicago office is at 519-21 West Van Buren Street.

The Axtell Auto Accessories Co., 1507 Michigan Boulevard, Chicago, was recently incorporated with \$24,000 capital stock. The company's business consists principally of the jobbing of automobile accessories, motor parts and garage equipment. Its manufacturing operations are confined to a line of special bodies for Ford and Chevrolet automobiles. The officers are Joseph E. Axtell, president, and Charles L. Runyan, secretary.

The Roger Dam Power Plant of the Consumers' Power Co., Grand Rapids, Mich., which was recently destroyed by fire, will be replaced at a cost of \$150,000. Work will begin as soon as the insurance is adjusted, and plans provide for equipment with 50 per cent greater capacity than that of the old plant.

The Illinois Traction System contemplates the construction of a large electric power generating plant at Decatur, Ill.,

according to an announcement by H. E. Chubbuck, general manager. Plans for the erection of the plant, he said, are contingent on securing permission from the city to use water for condensing purposes from a new artificial lake at Forties Park. Preliminary estimates place the cost between \$600,000 and \$1,000,000.

The D. V. Reedy Elevator Co., manufacturer of passenger elevators, Indianapolis, plans to construct a two-story factory, 44 x 202 ft., at 520-522 South New Jersey Street, at a cost of \$35,000.

The city of Ottumwa, Iowa, contemplates the erection of a \$600,000 hydroelectric power plant. Permission to dam the Des Moines River near Harvey has been granted by the United States War Department.

The city of Centralia, Ill., has awarded contract for a pumping station and the installation of other equipment, including the laying of a 14-in. pipe line to the Beeson Machinery Co., Kansas City, Mo.

The J. L. Ferguson Co., a newly organized corporation to manufacture labor-saving package machinery, has leased the former plant of the Quaker Oats Co. at Railroad and Shelby streets, Joliet, Ill. At present 30 men are at work in the plant and this number will be gradually increased. Others connected with the company besides J. L. Ferguson, the president, are L. R. Montgomery, sales manager, and E. H. Barr, superintendent.

The State Board of Regents, Pierre, N. D., T. W. Dwight, president, will commence the erection early in March of its new power plant at the State College of Agriculture and Mechanical Arts, Brookings, N. D. H. F. Berg, Pierre, is State engineer.

A vocational department will be installed in the new high school at Scottsbluff, Neb., plans for which are being prepared by R. A. Bradley & Co., Hastings, Neb., architects. The total cost is estimated at \$500,000.

The Western Electric Co., 500 South Clinton Street, Chicago, manufacturer of telephone and other electrical equipment, is planning for the early installation of machinery in the new building now being completed at its plant at Hawthorne, near Chicago. The structures represent an investment of close to \$2,000,000, and the machinery to be installed will approximate \$1,500,000.

The Pendergast Implement Co., Bemidji, Minn., manufacturer of agricultural implements, etc., is planning for the erection of a two or three-story building, 65 x 125 ft., estimated to cost about \$60,000.

The Commonwealth Edison Co., 72 West Adams Street, Chicago, has filed plans for a new one-story power house, 25 x 58 ft., at 5547 Lowe Avenue.

The Board of Education, Fremont, Neb., is taking bids until Feb. 20 for a three-story junior high school, 101 x 160 ft., to include a vocational department, estimated to cost about \$200,000. The A. H. Dyer Co., Fremont, is architect. S. S. Sidner is chairman of the school board.

G. C. Brown and W. C. Gridley, 1826 Hoffman Boulevard, Rockford, Ill., are taking bids for a new one-story machine and repair shop, 35 x 60 ft.; one-story power house, 25 x 30 ft., and one-story main automobile service works, 60 x 145 ft., estimated to cost close to \$80,000. C. E. Woolley, 610 Stewart Building, is architect.

## New England

BOSTON, Jan. 30.

Sales of machine tools in the past week have been comparatively small, although they include a few large and costly machines. Sentiment among the manufacturers of metal working equipment and sales representatives has taken a pronounced turn for the better, however. In individual instances it borders on optimism, and is based on several constructive facts. Preliminary estimates disclose bookings well above those for December and compare favorably with the November record. Additional prospects have developed the past week, most of them involving small amounts of equipment but having all earmarks of being urgent requisitions. Some of the more important inquiries on which prices have been out give strong evidence of maturing within the next fortnight, and other concerns have given assurances that the needed funds for required single machines will shortly be forthcoming. In the aggregate, inquiries for new machines equal those for used. Heretofore used tools have led in activity. Small shops, for the first time in months, are busier, and in quite a few cases have taken or are about to take on additional machinists. Many of the larger industrial plants are gradually increasing outputs, although still operating well below normal.

A Westfield, Mass., manufacturer of heaters is planning to start an experimental shop, and is inquiring for about



\$25,000 worth of equipment. The list includes a boring machine, planing, upright drilling, turning and other equipment. The Maine Central Railroad is inquiring for three tools, one of which is a large driving wheel lathe. This inquiry has no connection with the one sent out last September, which apparently has been abandoned. A local representative of a lathe manufacturer contemplates closing next week with a nearby manufacturer on a 16-in. x 10 ft. lathe, and has more than half a dozen inquiries on smaller turning tools. A New England maker of pumps has closed for a large horizontal drill, and signifies an intention of doing likewise on a special four-spindle drill and large lathes in the immediate future. A new company to manufacture power equipment is scheduled this week to close on a fairly large list of metal-working equipment involving new and used machines. As near as can be estimated there are 30 other inquiries, varying in size and value, that give promise of being closed in February. It is upon this comparative activity, and the more encouraging industrial outlook that the machine tool trade is basing expectations.

Sales the past week include an 11,000-lb. new power press and a used 500-lb. power hammer to a South Boston manufacturer, who contemplates additional equipment purchases; a new 8-in. surface grinder to a maker of electrical equipment; bulldozer or bending machine, a large punch and shear, all new equipment, to a central Massachusetts interest; one 16-in. x 10-ft. gap lathe to a Hyde Park, Boston, manufacturer, and a 9 x 4-ft. lathe to a local garage. Dealers in used equipment report prices as firmer. The only developments regarding prices on new machine tools are confirmations received from some Western manufacturers verifying lists issued in October and November.

Rockwell & Sherwin, Elm Street, Brattleboro, Vt., carriage manufacturers, have leased their plant to the Roberts Auto Co., and will retire from business. The automobile company will conduct a service department.

The Segal Metal Products Co., Springdale, Stamford, Conn., has awarded contract for a one-story, 45 x 81-ft. foundry to replace one recently destroyed by fire.

The Wallingford Steel Co., Wallingford, Conn., a new organization, contemplates the erection of three plant units, 100 x 130 ft., 50 x 100 ft., and 100 x 300 ft., respectively, on the east side of Quinnipiac River. Rolling mill equipment will be installed.

George U. Ladd, Worcester, is president, and George D. Morse, treasurer of the G. U. Ladd Co., recently incorporated under the laws of Massachusetts to manufacture pumps and steam devices. Details regarding production have not yet been worked out.

The plant formerly occupied by the Consolidated Motor Co., Middlefield, Conn., has been sold to the National Auto Stores Co., New Haven, Conn. It will be ready for operation before spring.

The Great Northern Paper Co., is completing at Greenville, Me., a 116 x 226 ft. plant containing a machine shop, wood-working shop, repair and paint shops, tool and stock rooms.

Richard H. Long, Framingham, Mass., states that the plant erected by him on Millbrook Street, Worcester, will be used for the manufacture of automobiles. Equipment requirements have not been made public.

Improvements are being made at the plant of the American Brass Co., Torrington, Conn., including the installation of electric furnaces and the changing over from steam to electric shop power.

The interests which recently acquired the Harley Co., Springfield, Mass., foundry and drop forging properties from motorcycle interests of that city have received an order for \$150,000 worth of maintenance accessories from a large Eastern railroad. Plans call for extensions and improvements in the near future, with possibilities of machine tool purchases.

The Kress Carriage Co., Concord Street, Lawrence, Mass., manufacturer of automobile bodies, etc., will build a two-story addition, 45 x 93 ft.

A vocational department will be installed in the new high school to be erected at Winchester, N. H., estimated to cost about \$50,000. Clarence Hoyt, 8 Beacon Street, Boston, is architect.

The J. L. Anthony Co., 161 Dorrance Street, Providence, R. I., manufacturer of metal specialties, jewelers' findings, etc., has awarded a contract to Mahoney & Tucker, 72 Weybosset Street, for a new one-story plant, 55 x 130 ft.

Work has been commenced on a new high school at Stoughton, Mass., with vocational department, estimated to cost about \$125,000. E. F. Leonard is chairman of the Stoughton School Board.

The Rhode Island Fittings Co., Hills Grove, R. I., manufacturer of metal fittings, etc., has awarded a contract to

Carl E. Carlson, 142 Atlantic Avenue, Providence, R. I., for a new one-story plant, 65 x 260 ft., on Narragansett Avenue.

Officials of the Potter & Johnston Machine Co., Pawtucket, R. I., manufacturer of automatic machinery, have organized the Potter Fine Spinners, Inc., with capital of \$800,000, and contemplate the erection of a new plant in the vicinity of the present works. The company is headed by James C. Potter and John Johnston, president and treasurer, respectively, of the Potter & Johnston company.

A vocational department will be installed in the new two-story high school to be erected at Palmer, Mass., estimated to cost about \$150,000. Morris W. Maloney, 145 Chestnut Street, Springfield, Mass., is architect.

A one-story power house, 40 x 50 ft., will be built in connection with a new industrial plant, 156 x 201 ft., at New Haven, Conn., plans for which are being prepared by Dwight E. Smith, Liberty Building, architect. The owner's name will be announced at an early date. It will cost about \$100,000.

A vocational department will be installed in the new junior high school to be erected at New Haven, Conn., site for which will be purchased at an early date. Local architects have been asked to submit competitive plans.

## Pittsburgh

PITTSBURGH, JAN. 30.

The United Engineering & Foundry Co., Pittsburgh, has closed for a 15-ton crane with 5-ton auxiliary which is the first of several cranes the company will buy in connection with the enlargement of the Frank Kneeland works. The Cleveland Crane & Engineering Co., Wickliffe, Ohio, through its Pittsburgh office has been awarded a 5-ton, 37-ft. span special low-head crane by the Elliott Co., Jeannette, Pa. These sales constitute the only crane business of the past week and in both instances old rather than new business was represented. In new business, the crane market in this district has not been so dull in several years. Several manufacturers' representatives state that they have had no new inquiries in more than a month and quotations put out have been for estimating purposes rather than against real prospects. The Allis-Chalmers Mfg. Co., Milwaukee, has been awarded a 48 x 60-in. twin tandem 3300-kw. blast furnace gas engine electric unit by the National Tube Co., for its Lorain, Ohio, works. Machine-tool activities are extremely small and sales out of dealers' stocks also have decreased in the past week. The West Penn Steel Co., Brackenridge, Pa., is said to be in the market for a couple of key-seating machines, but having only occasional use for them it is believed that used, rather than new machines will be bought.

The Frick & Lindsay Co., Sandusky and Robinson streets, Pittsburgh, manufacturer of railroad and mine equipment, is completing excavations for the erection of its proposed addition, estimated to cost about \$90,000.

The Jeffrey-DeWitt Insulator Co., Kenova, W. Va., has been organized with a capital of \$800,000, as a subsidiary of the Jeffrey-DeWitt Co., Detroit, to operate a local plant for the manufacture of electrical insulation products. M. L. Burnett and J. S. McNeer, both of Huntington, W. Va., are among the incorporators.

The Board of Education, Princeton, W. Va., will take bids in February, for a new two-story and basement high school, 60 x 190 ft., to include vocational department, estimated to cost about \$150,000. J. V. Woodson is president of the board. Wysong, Tufts & Jones, Princeton, are architects.

A vocational department will be installed in the new high school to be erected by the Slab Fork District School Board, Statesbury, W. Va., plans for which have been completed.

## Detroit

DETROIT, JAN. 30.

The Rich Steel Products Co., Battle Creek, Mich., has reincorporated with a capital of \$3,500,000 and will soon start production of automobile parts. It will build an extension to take care of the additional business, and will probably double the present working force of 350 men.

The Superior Combustion Engine Corporation, Detroit, will start production of a new type of heavy duty internal combustion engine as soon as manufacturing facilities can be procured. The company is backed largely by Detroit capital and includes a number of prominent Detroit business men among its officers and directors. Announcement of its personnel and plans will be made in a short time.

The Citizen's Light & Power Co., Adrian, Mich., will proceed immediately to double the capacity of its plant.

A turbine generator of 2,000-kw. capacity and additional boilers will be purchased.

The Michigan Crown Fender Co., Ypsilanti, Mich., has purchased the Jackson Stove Co., Jackson, Mich., and will move the plant to Ypsilanti. It will manufacture oil stoves, heaters and ranges with its regular line.

The Gratiot Mining Co., Calumet, Mich., has plans under way for a new power house at its properties.

The Motor Wheel Corporation, Lansing, Mich., will defer until March the erection of its new one-story and basement plant, 120 x 240 ft., contract for which was awarded recently to the H. G. Christman Co.

A vocational department will be installed in the two-story and basement high school to be erected at Mt. Clemens, Mich., estimated to cost about \$200,000. Plans are being prepared by T. Van Damme, 14 North Front Street, architect.

The Kalamazoo Ice & Fuel Co., 113 East Kalamazoo Street, Kalamazoo, Mich., is completing plans and will call for bids early in February for a new ice manufacturing plant. George R. Bright, 103 Marquette Building, Detroit, is architect. Benjamin Steel is secretary and treasurer.

The Village Council, Union City, Mich., is completing plans for a municipal hydroelectric power plant to cost about \$150,000. John L. Moore is president. Holland, Akerman & Holland, Ann Arbor, Mich., are engineers.

## Cincinnati

CINCINNATI, Jan. 30.

The past week the machinery market showed an improvement over the previous one. While a number of fair-sized inquiries are still being figured on, most of the orders placed were for single tools, with the exception of an order for approximately 40 machines booked by a local manufacturer from an automobile maker. This is one of the largest orders placed locally for some time. The inquiry from Japan for 15 lathes, mentioned last week, is still active, and in addition several local manufacturers are in receipt of single orders for lathes and drilling machines from the Far East. Very little railroad business is offering at present, although local manufacturers are participating in some of the business recently placed. Altogether, the sentiment in the trade is much more optimistic and orders booked in January, with most manufacturers, will be the best for many months.

The Precision Truing Machine & Tool Co., 25 East Third Street, Covington, Ky., has purchased the plant and equipment of the Chicago Steel & Valve Co. and has moved it to Covington, where production of the Ross-Murray truing tool will be continued in connection with the devices now being made by the company. The Precision company recently moved its plant from 407 Madison Avenue to its present location and is now completely equipped for production.

The city of Hamilton, Ohio, is preparing to rebuild its electric lighting plant at a cost of about \$650,000. The Froehlich & Emory Engineering Co., Toledo, Ohio, is engaged in preliminary surveys preparatory to submitting cost estimates and complete plans which are expected to be ready on May 1.

The Dayton Steel Racquet Co., Dayton, Ohio, has been incorporated with a capitalization of \$200,000 to manufacture steel tennis racquets. W. A. Larned, noted tennis player, is president of the company. The company will at present carry on manufacturing operations at the plant of the Dayton Pneumatic Tool Co., Miami Chapel Road, Dayton.

The Murphy Valve Co., Columbus, Ohio, has been incorporated with a capitalization of \$50,000 to manufacture a valve invented by Daniel R. Murphy, Newark, Ohio. Offices have been opened in the Majestic Building, Columbus, and plans are being completed for the production and distribution of the product.

The Norton-Broadway Machinery Co., 238 Broadway, Cincinnati, is making inquiries for a number of water-tube boilers, Babcock & Wilcox type, of about 200-hp. rating.

## Baltimore

BALTIMORE, JAN. 30.

The American Ice Co., Calvert Building, Baltimore, has acquired a site on Register Street, for a new ice manufacturing plant, estimated to cost about \$50,000.

The Citizens' Improvement Association, Riverdale, Md., is considering the erection of a municipal electric lighting plant. Dr. J. S. Caldwell is president.

The American Oil Co., American Building, Baltimore, is perfecting plans for a new plant to cost about \$200,000, including equipment. A number of steel tanks will be built for the storage department. Louis Blaustein is manager.

The Eastern Shore Gas & Electric Co., Salisbury, Md., is planning for extensions and improvements in its electric power plant and system, and has arranged a budget of \$500,000, for work during the next 24 months, of which amount \$300,000, will be expended this year.

M. L. Himmel & Son, 107 North Frederick Street, Baltimore, manufacturers of store fixtures and equipment, have awarded contract to John Kunkel, 29 South Linwood Avenue, for an addition and improvements estimated to cost about \$35,000.

The Chamber of Commerce, Wilmington, Del., is negotiating with the Clark Vending Machine Co., capitalized at \$100,000, and headed by Dr. V. K. Clark, relative to the establishment of a plant to manufacture a new type of package vending machine, electrically operated. Consideration is being given to the plant of the Artillery Fuse Co., South Wilmington, which has been idle for more than two years. The proposed works will give employment to more than 500 men.

The Pomona Terra Cotta Co., Greensboro, N. C., has broken ground for the erection of a new unit, to be known as Plant No. 4, comprising a main four-story building, 70 x 225 ft., with adjoining structure, 30 x 50 ft., estimated to cost about \$100,000, including machinery. It will be equipped for the manufacture of pipe and kindred products. W. C. Boren, Jr., is secretary and treasurer.

The Chamber of Commerce, Atlanta, Ga., is considering plans for the establishment of a factory to manufacture wire door mats and kindred products. A company will be formed to build and operate the works. Frank Weldon is acting secretary.

The Market Engineering & Development Co., 1606 Candler Building, Atlanta, Ga., is arranging for the construction of a new refrigerating plant to cost \$50,000. A cold storage plant will also be built. Roberts & Co., Atlanta, are architects and engineers.

The Reedy River Power Co., Laurens, S. C., is taking bids for its proposed new steam-operated electric power plant, two-stories, 50 x 65 ft., and estimated to cost about \$100,000, including equipment. The J. E. Serrine Co., Greenville, S. C., is engineer in charge.

A vocational department will be installed in the new two-story and basement high school to be erected at Lincolnton, N. C., plans for which are being prepared by James A. Salter, Raleigh, N. C., architect.

The Common Council, Hagerstown, Md., is having plans completed for its municipal electric light and power plant and will call for bids in the spring. A. B. Grubmeyer, 21 East Franklin Street, is engineer.

Plans are being completed by the Board of Education, Tarboro, N. C., for a two-story high school, to include a vocational department. Charles C. Hook, 207 Trust Building, Charlotte, N. C., is architect.

The Guilford Building Co., Fidelity Building, Baltimore, is constructing a public garage and repair shop at Calvert and Thirty-fourth streets, 50 x 122 ft.

The American Concrete Tie & Products Co., Gaither Building, Baltimore, has been organized and plans to build a factory for the manufacture of concrete products. J. W. Ritter is secretary.

## Cleveland

CLEVELAND, Jan. 30.

The local machine tool market improved somewhat during the week. The Arvac Mfg. Co., Anderson, Ind., continued its buying, placing orders for 20 small manufacturing lathes and three turret lathes. A Cleveland manufacturer of drilling machinery reports an improvement in orders from the East. The Cleveland Heater Co. purchased a used press of 1000-ton capacity. The Zigler Mfg. Co., Alexander, Ind., is said to be in the market for about a dozen machines. The Cleveland Board of Education is inquiring for eight machines, all wood-working but two.

Machinery disposed of at auction from the Cleveland plants of the Standard Parts Co. last week brought low prices. There were 115 machines sold, mostly to dealers. A considerable part went to Chicago and Pittsburgh dealers. The list included 36 engine and turret lathes, 12 automatic screw machines, 25 milling machines, 30 grinders and 12 milling machines.

Old machines brought comparatively better prices than fairly good used tools. Some of the selling prices of machines in good condition were as follows: Brown & Sharpe and Becker milling machines, \$225 to \$325; large Brown & Sharpe milling machine, \$600; La Blond universal milling machine, \$900; Warner & Swasey 3A turret lathes, \$530; automatic screw machines, \$350 to \$375.

The Wheeling Steel Corporation has sent out its inquiry



for about a dozen traveling cranes that will be required in connection with its plant extensions.

The Cleveland Board of Education has issued a list of equipment for the West Technical High School for which bids will be received Feb. 13. The list, which calls for motor-driven machines, includes:

- One band sawing machine.
- One 18-in. hand planer and jointer.
- One 30-in. single surface planer.
- One double arbor universal saw bench.
- One universal revolving oil stone tool grinder.
- Two wood turners.
- One combined band saw setting and filing machine.

The Foote-Burt Co., Cleveland, manufacturer of drilling machines, has purchased the assets and business of the Bell Washer & Wringer Co., Cleveland, manufacturer of electric washing machines. The Foote-Burt Co. for some time has been manufacturing these machines for the Bell company.

Mechanical equipment aggregating in excess of \$800,000, according to the architect's estimate, will be required in the erection of new Medical School buildings for the Western Reserve University of Cleveland. The principal items of mechanical construction are \$530,000 for the Medical School and \$261,000 for power house equipment.

The Gartland & Carroll Foundry Co., Sandusky, Ohio, which has been operated as a partnership, has been incorporated. No change will be made in the management.

The Scott & Son Fan Co., Martins Ferry, Ohio, has purchased the plant of the South Zanesville Gear & Woodwork Co., Zanesville, Ohio, and will move to its new quarters shortly. It manufactures ventilating fans and heating systems.

The proposed merger of the Kelley Island Lime & Transport Co., Cleveland, and the Dolomite Products Co., Maple Grove, Ohio, which was recently announced to have been effected, has been declared off, according to official announcements made by representatives of these two companies.

The Akron General Japanning Co., Akron, Ohio, incorporated with a capital stock of \$50,000, has established a japanning plant at Thornton and Nathan streets.

The Standard Parts Co., Cleveland, has taken an order from the Wills Sainte Clair Co. for 5000 sets of automobile axles, approximating \$1,000,000, deliveries of which will start in March and extend over several months.

The Mueller Electric Co., 2143 Fairmount Road, Cleveland, manufacturer of electrical products, has completed plans for the erection of a new one and two-story plant, 65 x 95 ft., on East Thirty-first Street, to cost about \$50,000. G. S. Rider & Co., Century Building, Cleveland, are architects.

A vocational department will be installed in the three-story and basement senior high school, 200 x 300 ft., to be erected at Mansfield, Ohio, estimated to cost about \$800,000. Plans are being prepared by Althouse & Jones, Market House, West Fourth Street, architects.

The Board of Education, Canton, Ohio, is arranging for the installation of equipment in the vocational department at the new McKinley high school.

## Indiana

INDIANAPOLIS, JAN. 30.

The Martin-Perry Co., Indianapolis, manufacturer of automobile bodies, with headquarters at York, Pa., has leased property at St. Louis, for the establishment of a new assembling and operating plant. The Indianapolis works will devote a large part of production to truck bodies for the Willys-Overland Co. Chapin Spahn is general manager.

The Evansville Structural Supply Co., Evansville, Ind., is planning the erection of a new one-story steel fabricating works 100 x 200 ft., to be operated in conjunction with its present iron and steel plant. It is estimated to cost about \$40,000.

The Indianapolis Light & Heat Co., 48 Monument Place, Indianapolis, will commence the immediate erection of a new one-story power house addition, 63 x 90 ft., estimated to cost about \$42,000.

A vocational department will be installed in the two-story and basement high school to be erected at Farmersburg, Ind., bids for which are being taken until Feb. 7. It will cost about \$50,000, exclusive of equipment. Johnson, Miller & Miller, 105 South Seventh Street, Terre Haute, Ind., are architects.

Fire, Jan. 23, destroyed the plant of the Keene Mfg. Co., Crothersville, Ind., manufacturer of toys, with loss estimated at about \$30,000. Tentative plans are under consideration for the erection of new works with increased capacity, estimated to cost \$100,000.

The Carbon Fire Brick & Coal Co., 345 Lemcke Annex

Building, Indianapolis, is considering preliminary plans for the erection of a new fire brick and refractory plant at Carbon, Ind., estimated to cost \$150,000, including equipment.

A vocational department will be installed in the two-story high school to be erected at North Manchester, Ind., 70 x 120 ft., and estimated to cost about \$150,000. Bids will be asked early in the spring. Plans are being prepared by Charles R. Weatherhogg, Citizens' Trust Building, Fort Wayne, Ind.

## The Central South

ST. LOUIS, JAN. 30.

The Acme Brass & Machine Works, 1628 Oak Street, Kansas City, Mo., has completed plans for a two-story machine shop, 25 x 115 ft., at 609 East Seventeenth Street, and will commence work at once.

The Hall & Brown Woodworking Machinery Co., 1913 North Broadway, St. Louis, is completing plans and will call for bids in March for its proposed addition and improvements in the present works. The estimated cost is \$50,000. Preston J. Bradshaw, International Life Building, is architect.

A four-story automobile service and repair building, 100 x 160 ft., estimated to cost about \$300,000, will be erected on St. Charles Street, St. Louis, by the Scruggs, Vandervoort & Barney Dry Goods Co., Ninth and Olive streets, St. Louis, for company trucks and automobiles. Bids will be asked at once.

The American Asphalt Roof Corporation, Kansas City, Mo., manufacturer of prepared roofing products, will make enlargements in its plant to cost about \$50,000.

Fire, Jan. 18, destroyed a portion of the oil refinery of the El Dorado Oil & Pipe Line Co., El Dorado, Ark., with loss estimated at \$30,000. The plant will be rebuilt.

The Appalachian Marble Co., Middlebrook Pike, Knoxville, Tenn., will build a one-story addition, 200 x 210 ft., to double the present capacity. New polishing, trimming and other machinery will be installed. The extension will cost about \$150,000, including equipment. T. J. Deane is secretary and treasurer.

The Joplin Zinc Products Co., Joplin, Mo., will soon take bids for a new plant to manufacture zinc shingles and kindred products. R. E. Love, 1531 East Seventh Street, is architect.

A vocational department will be installed in the new two-story and basement high school to be erected at Hoxie, Kan., 67 x 125 ft. S. S. Voigt, room 610, Fourth National Bank Building, Wichita, Kan., is architect.

The Kansas City Cold Storage & Warehouse Co., Kansas City, Mo., recently organized as a subsidiary of the United States Cold Storage Co., West Thirty-ninth Street and Hoyne Avenue, Chicago, has acquired over 140,000 sq. ft. for a new cold storage and refrigerating plant, estimated to cost about \$3,000,000 with machinery.

The Southland Motor & Body Corporation, Jacksonville, Tenn., recently formed with a capital of \$250,000, will operate a local plant to manufacture automobile bodies. It will approximate about 220,000 sq. ft., and equipment will be provided to develop a daily capacity of about 200 complete bodies. C. L. Williams is president and Joseph S. Boyd, secretary.

W. J. Barnhill & Co., Madisonville, Ky., will take bids during February for a two-story machine and repair shop, 60 x 160 ft., primarily for automobile work. John T. Waller, Hopkinsville, Ky., is architect.

A vocational department will be installed in the two-story and basement high school, 85 x 134 ft., to be erected at Jewell, Kan., estimated to cost about \$85,000. Plans are being drawn by Mann & Gerow, Rorabaugh-Willey Building, Hutchinson, Kan. H. A. Noble, room 411, Reliance Building, Kansas City, Mo., is structural engineer.

The Gray Knox Marble Co., Knoxville, Tenn., is considering plans for enlargements in its plant, to cost about \$200,000, including machinery.

The Ryan Motor Co., Tulsa, Okla., has leased a two-story and basement building, 150 x 300 ft., to be erected on South Main Street by Frank R. McCullough and associates, First National Bank Building, to cost about \$150,000. It will be equipped for a general automobile works, including repair and service departments. Stone, Walters & Deegan, 334 Kennedy Building, are architects.

The American Commercial Car Co., Gratiot and French streets, Detroit, manufacturer of automobiles, has acquired a building at Knoxville, Tenn., for a branch plant. It will be enlarged to approximate 10,000 sq. ft. of floor space. A complete body manufacturing works will be installed.

G. W. North and C. S. Cleaver, Deming, N. M., are organizing a company to build a plant to manufacture auto-

matic hay balers and other farm machinery. Employment will be given to more than 500.

The Board of Education, Muskogee, Okla., is planning the erection of a two-story addition to the manual training high school, estimated to cost about \$50,000. H. O. Valeur & Co., 705 Manhattan Building, are architects. E. D. Cave is clerk of the board.

The City Council, St. Charles, Mo., is perfecting plans for a bond issue of \$235,000 to build a municipal electric light and power plant. A site has been selected.

The University of Missouri, Columbia, Mo., will receive bids Feb. 24 on a power plant building, including smoke stack, tunnel, boilers and stokers, traveling crane, steam and water mains, piping, etc. Applications for plans and specifications may be made to Edward E. Brown, business manager, Columbia, Mo. Deposit required, \$10. Other buildings to be erected, plans now in preparation, are agricultural, chemistry, women's gymnasium, medical extension hospital and mechanic arts buildings at a total estimated cost of \$800,000.

## Milwaukee

MILWAUKEE, Jan. 30.

New business is beginning to simmer through in slowly increasing volume, but trade is still decidedly spotty and spasmodic. Prospects for February are considered encouraging, judging by inquiries which developed the past 10 days. The automotive parts industry has been favored with some good orders the last week or two. Outside of placing an order here and there for one or two tools, the railroads have not yet come into the market to any large extent. Sentiment among manufacturers as well as dealers is that the next quarter should develop a moderate call for equipment from a wide range of industries. Makers of road construction and maintenance equipment have recently booked large municipal orders which will shortly be supplemented by orders from contractors.

The Bucyrus Co., South Milwaukee, Wis., manufacturer of steam shovels, drag-line excavators, cranes and dredges, has engaged Frank D. Chase, Inc., 654 North Michigan Avenue, Chicago, to design and erect a brick and steel foundry, 60 x 276 ft., estimated to cost \$125,000 complete. P. J. Nordstrom is general superintendent.

The Heating & Power Appliance Co., Milwaukee, has been incorporated with a capital stock of \$25,000 to manufacture heating and power devices and appliances. The incorporators are Edmund C. Rosenberg, 603 Caswell Block; Joseph Eder, 470 Tenth Street, and Frank L. Hutchinson, 425 East Water Street, a heating and power engineer.

The Forster Foundry Co., Menominee, Wis., recently incorporated with \$10,000 capital stock, has taken over the plant and business of the Aetna Engine Works, of the same city, which manufactures iron, brass and aluminum castings and coal chutes, sleigh shoes, sandscreening machines, fire escapes, etc., having also a welding and cutting department. The shops aggregate 20,000 sq. ft. of floor space. The ownership remains unchanged. H. H. Forster, one of the founders of the business in 1898, is president; Samuel H. Forster, vice-president, and George B. Forster, secretary and treasurer. Some improvements in the plant are contemplated, but for the present no additions will be made.

The Rautbrod Mfg. Co., Milwaukee, has been granted a charter to manufacture machinery, tools, dies and hardware specialties. The incorporators are Zebulon Rautbrod, 810 Galena Street; Louis O. Laverenz, 747 Buffum Street, and J. A. Uttecht. Mr. Rautbrod has conducted a small shop for several years which the incorporation expects to develop.

The Board of Education, Lancaster, Wis., has engaged Parkinson & Dockendorff, architects, LaCrosse, Wis., to prepare plans for a new high school to cost between \$175,000 and \$200,000, with provision for manual training. Bids probably will be taken about March 15 or April 1. F. J. Sanville is secretary of the board.

The Drophead Projector Co., Fond du Lac, Wis., manufacturer of portable motion picture projecting machines, has issued \$40,000 additional stock to finance enlargement of production. A small quantity of tools will be purchased. Charles Fitz is general superintendent.

The C. J. Atkinson Co., 244 Fourth Street, Milwaukee, has incorporated its business without change of style, with a capital stock of \$10,000. Cyril J. Atkinson, founder of the business, becomes president, treasurer and general manager. It does a general business in metallurgical engineering, chemical analysis, etc.

The Parelskin & Weinreis Co., Milwaukee, has been organized with a capital stock of \$15,000 to buy, sell and generally deal in used machinery and factory equipment. The incorporators are M. A. Weinreis, Arthur J. Nelson and Samuel N. Parelskin, 833 Twenty-ninth Street.

## Seattle

SEATTLE, Jan. 24.

The Threshers Inserted Tooth Cylinder Co., Spokane, Wash., recently organized with a capital of \$100,000 to manufacture special threshing machines, is arranging for the early establishment of a local plant. The company is headed by I. O. Brock, New Madison Hotel, Spokane, and the inventor of the machine.

The Laurel Box Co., White Salmon, Wash., is planning to rebuild the portion of its plant recently destroyed by fire with loss estimated at about \$45,000.

The Idaho Power Co., Boise, Idaho, has arranged for an appropriation of \$200,000 for extensions and improvements in its electric power plant and system in the Boise and Mountain Home districts.

The Coy Valve Co., Chehalis, Wash., is perfecting plans for a new factory to manufacture valves and other steam specialties. Work will commence at an early date. W. Graham heads the company.

The Three Rivers Light & Power Co., Reedsport, Ore., recently organized, has taken over a local electric power plant and plans for extensions and the installation of new equipment. The company is headed by Stanley D. Chapin and J. R. Browne, Reedsport.

The Colby Compression Tube Co., Portland, Ore., has purchased property at East Third and Burnside streets, and has plans under way for a factory to manufacture inner tubes.

The Common Council, Nampa, Idaho, is arranging for the construction of a municipal electric light and power plant.

## California

SAN FRANCISCO, Jan. 24.

The Santa Fe Railway Co., Los Angeles, will take bids at once for a one-story addition to the machine shop at San Bernardino, Cal., 65 x 510 ft. It will be equipped with a traveling crane. The shop with equipment will cost about \$300,000. The engineering department of the company, Kerckhoff Building, Los Angeles, is in charge.

The Ontario Power Co., Ontario, Cal., is contemplating the erection of a new power plant in the San Antonio Canyon section, to cost about \$50,000.

A vocational school will be established by the Board of Education, Reedley, Cal., in connection with a union high school. The project will cost about \$450,000. Plans are being prepared by Norman F. Marsh, 210 Broadway Central Building, Los Angeles, architect.

The Pacific Gas & Electric Co., 445 Sutter Street, San Francisco, will make extensions and improvements in its electric power plant and system in the vicinity of Turlock, Cal., to cost about \$110,000. It is also considering the erection of a new power house at Martinez, Cal., to cost approximately \$200,000.

The Union Ice Co., Napa, Cal., has completed arrangements for a new ice-manufacturing plant to cost about \$60,000.

The Pacific Meter Works, San Francisco, a branch of the American Meter Co., 105 West Fortieth Street, New York, has leased a two-story building at 1123 Harrison Street, San Francisco, to manufacture gas meters and parts. Production will be primarily for export trade. E. W. Hammond will be local manager.

The Pacific Autoplane Co., Figueroa Street, Los Angeles, manufacture of automobile parts, airplanes, etc., is arranging for the erection of a new plant to cost about \$35,000. W. J. Waters is chief engineer.

## The Gulf States

BIRMINGHAM, Jan. 30.

The Department of Public Finance, New Orleans, R. M. Murphy, commissioner, will install an electric traveling crane and electrical generating equipment in connection with the new municipal incinerator plant, bids for which are being taken until Feb. 6. John Klorer is city engineer.

The City Council, Abbeville, La., has arranged for the immediate construction of a municipal electric light and power plant. Henry A. Mentz, Magnolia, Miss., is consulting engineer. R. P. LeBlanc is mayor.

The Patton Cement Co., Rotan, Tex., recently organized, has completed plans for its proposed new works on a site about a mile from the city. Ground will be broken in February. It is estimated to cost about \$350,000, including machinery.

The Cisco & Northeastern Railroad Co., Cisco, Tex., has



arranged for a loan of \$300,000, the proceeds to be used for extensions and betterments, including the enlargement of car and locomotive shops, and the installation of additional equipment, etc. R. Q. Lee is president.

The Alexandria Welding Works, Alexandria, La., is planning for the establishment of a new factory at Sixth and Lee streets. W. D. Worthington is president.

The Common Council, Livingston, Tex., is considering plans for rebuilding the municipal electric light and power plant, destroyed by fire, Jan. 9. The plant is operated by the Livingston Mfg. Co.

The Water & Sewerage Board, 526 Carondelet Street, New Orleans, is taking bids until March 20 for electrical equipment, boilers, and electrically-operated centrifugal pumping machinery for the water-works department. A. G. Hoffat is secretary.

The Wichita Falls Foundry & Machine Co., Wichita Falls, Tex., has purchased property at Railroad and New York avenues, Fort Worth, Tex., for a new plant, to give employment to about 100. It will be used for the manufacture of brass castings and other metal products. The company proposes to remove its present works to the new location. Plans for the initial structure have been filed.

The Palm Beach County Board of Public Instruction, West Palm Beach, Fla., has awarded contract to E. H. Barco, West Palm Beach, for a new one-story vocational school. J. Williams, West Palm Beach, is architect.

The Shreveport Ice Co., Shreveport, La., will soon commence the construction of a new ice and refrigerating plant at Zwolle, La., to be ready for service during the spring.

## Canada

TORONTO, Jan. 30.

Machine tool dealers in this section state that inquiries are coming forward in goodly number, but buying has not yet started to pick up to the extent some expected a month or two ago. Manufacturers of equipment now report more activity and several firms are fairly well supplied with orders. The Canadian Fairbanks-Morse Co., Montreal, states that the business closed in its small tool and machine shop supply departments has increased to a marked extent the past two weeks, the rural population purchasing very freely of late gas engines, pumps and many specialties for farm use. While the demand has improved from smaller buyers, large lists are absent from the market. Prospective buyers, however, are making their requirements known, and it is generally expected that the demand for most lines of equipment will be active by next spring. Small tools are moving well. During the week, high speed drills dropped 10 per cent in price, and it is expected that this decline will further stimulate business in the small tool market.

The Vulcan Co., 84 Fulton Street, London, Ont., maker of iron castings and equipment, is in the market for metal-working machinery, lathes, planers, shapers, welding equipment, riveters, and belting.

The Board of Waterworks, Essex, Ont., is in the market for oil engines.

The Mis-Can-Ada Mfg. Co., 12 Chamberlain Avenue, Ottawa, Ont., recently incorporated with a capital stock of \$65,000, does not intend to build a plant at present. It has obtained suitable quarters for manufacturing vacuum cleaners, and expects to be in the market from time to time for machinery and supplies.

The Utilities Board, Simcoe, Ont., will install additional equipment in the electric light plant to increase the capacity.

The Goderich Elevator Co., London, Ont., is asking for grain handling and unloading machinery, also two steel unloading towers for elevators at Goderich, Ont.

The Sarnia Paper Box Co., Sarnia, Ont., recently increased its capital stock to \$300,000, and will move its factory to London, Ont. It is in the market for equipment to manufacture fiber and corrugated containers.

The Sarnia Collegiate Institute and Technical School, Sarnia, Ont., is nearing completion and is now ready to purchase machinery and equipment for the several departments.

The Ford Motor Car Co. of Canada, has acquired the plant of the Bain Wagon Works, Woodstock, Ont., which will be used exclusively for the manufacture of Ford trucks.

The Wettlaufer Co., Mitchell, Ont., manufacturer of concrete machinery, etc., is arranging for the erection of a one-story addition, 75 x 80 ft., of concrete and steel. It will be used as an erecting shop, and will have a traveling crane running through the center.

The town of Peterborough, Ont., is having plans prepared for a pumping station to cost \$200,000. R. H. Parsons is engineer.

J. D. McArthur & Co., Prince George, B. C., will build a sawmill there to cost \$50,000.

Alphonse Bouliane, treasurer, Cap de la Madeleine, Que., will receive bids until Feb. 13, for one 6-in. automatically balanced, three-stage, centrifugal pump with dual drive consisting of electric motor and gas engine to run alternately. The engine is for service in case the electric power fails. The unit to deliver 1200 gal. per min. against 300 ft. head, operating at 1200 r.p.m., 8-in. intake, 6-in. discharge. Also one Sterling gasoline engine; one automatic electric starter; one Venturi meter, and one pressure gauge register.

The city of Toronto, proposes to spend \$10,425,000 on municipal undertakings the present year. Included in the estimates just completed by Works Commissioner R. C. Harris, is an item for additional pumps and extension of reservoirs to cost \$1,050,000.

The William Hamilton Co., Peterborough, Ont., has the contract for supplying the hydroturbines for the new power plant at Nassau, Ont., for the Canadian General Electric Co. It also has been awarded contract for the equipment for the power plant of the Red Arrow Tire Co., which has begun work on the erection of a plant at Peterborough, Ont.

James Whalen, president Port Arthur Shipbuilding Co., Port Arthur, Ont., states that his company has received contract from the Matthews Steamship Co., Toronto, for the construction of a 550-ft. lake freighter. The vessel will be built in Toronto and will give employment to about 700 men. About 400 men will be taken on at the Port Arthur plant for work on a contract for paper machinery required by the Provincial Paper Mills. The construction of the paper machines will require about two years.

The Utilities Board, Simcoe, Ont., proposes to install additional electrical equipment in its electric plant. Dr. A. T. Sihler is chairman.

The ratepayers of Trenton, Ont., passed a by-law authorizing the construction of a petroleum refinery for the Mona Petroleum Products Co., 120 Adelaide Street West., Toronto. Dr. G. Hertischka is manager.

The ratepayers of Port Arthur, Ont., passed a by-law granting concessions to the Provincial Paper Mills, Ltd., 56 University Avenue, Toronto, which will proceed with the erection of a mill to cost \$1,500,000.

## Plans of New Companies

The Standard Foundry Products Co., 661 Lafayette Avenue East, Detroit, will manufacture brass, bronze and aluminum castings, rough or finished.

The Summit Stove Co., Morrison, Ill., will manufacture stoves, ranges and furnaces, continuing the business which has been conducted for some years by the Summit Stove Works.

The Western Instrument & Mfg. Co., 1001 Washington Boulevard, Chicago, recently incorporated with a capital of \$125,000, will manufacture medical, surgical, dental and veterinary instruments, and other precision equipment. It will maintain a punch press department and will specialize in light die work. The company expects to build special machinery and do manufacturing work by special contract.

The Arion Steel Co., 141 Milk Street, Boston, has been formed to deal in high grade steel of every description.

The Signal Truck Corporation, Detroit, has been formed to continue the manufacture and sale of the Signal truck formerly made by the Signal Motor Truck Company, dissolved. The stockholders of the new corporation purchased at public auction from the receivers the assets of the Signal Motor Truck Company, including the equipment the present organization consists of.

The Walker Machine Works, will operate a foundry at Charlottesville, Va., making very large castings up to 1500 lb. The machine shop is adapted for the building of special machines of a small and intricate nature. The owner of the plant is Charles M. Walker.

The Canadian Automatic Fire Alarm Co., Kansas City, Mo., expects to shop on the open market for contracts to manufacture its various products which are outlined in a booklet now being mailed.

The use of roller bearings for railroad freight and passenger cars has been under investigation for more than a year by the Michigan Central Railroad. The bearing is the invention of L. K. Stafford, Detroit.

# Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-ferrous Metals."

## Iron and Soft Steel Bars and Shapes

Bars:	Per Lb.
Refined bars, base price .....	2.52c.
Swedish bars, base price.....	10.00c.
Soft steel bars, base price .....	2.53c.
Hoops, base price .....	3.38c.
Bands, base price .....	3.13c.
Beams and channels, angles and tees	
3 in. x ¼ in. and larger, base.....	2.63c.
Channels, angles and tees under 3 in. x	
¼ in., base .....	2.53c.

## Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger .....	2.50c.
(Smooth finish, 1 to 2½ x ¼ in. and larger) ..	2.70c.
Toe calk, ½ x ¾ in. and larger.....	3.20c.
Cold-rolled strip, soft and quarter hard..	6.25c. to 7.25c.
Open-hearth spring steel .....	3.55c. to 6c.
Shafting and Screw Stock:	
Rounds .....	3.45c.
Squares, flats and hex. ....	3.95c.
Standard cast steel, base price.....	12.00c.
Extra cast steel .....	17.00c.
Special cast steel .....	22.00c.

## Tank Plates—Steel

¾ in. and heavier .....	2.63c.
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## Sheets

### Blue Annealed

	Per Lb.
No. 10 .....	3.28c. to 3.53c.
No. 12 .....	3.33c. to 3.58c.
No. 14 .....	3.38c. to 3.63c.
No. 16 .....	3.48c. to 3.73c.

### Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet, Per Lb.
Nos. 18 to 20.....	3.55c. to 3.80c.	.....
Nos. 22 and 24.....	3.60c. to 3.85c.	4.10c.
No. 26 .....	3.65c. to 3.90c.	4.15c.
No. 28 .....	3.75c. to 4.00c.	4.25c.
No. 30 .....	4.00c. to 4.25c.	.....
No. 24 and lighter, 36 in. wide, 10c. higher.		

## Galvanized

	Per Lb.
No. 14 .....	3.85c. to 4.10c.
No. 16 .....	4.00c. to 4.25c.
Nos. 18 and 20.....	4.15c. to 4.40c.
Nos. 22 and 24.....	4.30c. to 4.55c.
No. 26 .....	4.45c. to 4.70c.
No. 27 .....	4.60c. to 4.85c.
No. 28 .....	4.75c. to 5.00c.
No. 30 .....	5.25c. to 5.50c.
No. 28 and lighter, 36 in. wide, 20c. higher.	

## Welded Pipe

Standard Steel		Wrought Iron	
Black	Galv.	Black	Galv.
½ in. Butt... —56	—40	¾-in. Butt... —30	—13
¾ in. Butt... —61	—47	1½-in. Butt... —32	—15
1-3 in. Butt... —63	—49	2-in. Lap.... —27	—10
3½-6 in. Lap. —60	—46	2½-6-in. Lap. —30	—15
7-8 in. Lap... —56	—34	7-12-in. Lap.. —23	— 7
9-12 in. Lap.. —55	—33		

## Steel Wire

	Per Lb.
Bright basic .....	3.50c. to 3.75c.
Annealed soft .....	3.50c. to 3.75c.
Galvanized annealed .....	4.25c. to 4.50c.
Coppered basic .....	4.00c. to 4.25c.
Tinned soft Bessemer .....	5.50c. to 5.75c.

\*Regular extras for lighter gage.

## Brass Sheet, Rod, Tube and Wire

### BASE PRICE

High brass sheet .....	17¼c. to 17½c.
High brass wire .....	17¼c. to 17½c.
Brass rod .....	14¼c. to 15 c.
Brass tube, brazed .....	26 c. to 27½c.
Brass tube, seamless .....	18½c. to 19 c.
Copper tube, seamless .....	21¼c.

### Copper Sheets

Sheet copper, hot rolled, 24 oz., 21¼c. per lb. base.	
Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.	

### Tin Plates

Bright Tin	Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20	Coke—14-20	Primes	Wasters
			80 lb....	\$6.05	\$5.80
			90 lb....	6.15	5.90
			100 lb....	6.25	6.00
IC..	\$10.00	\$8.50	IC...	6.40	6.15
IX..	11.25	10.00	IX...	7.40	7.15
IXX..	13.00	11.50	IXX...	8.40	8.15
IXXX..	14.75	13.25	IXXX...	9.40	9.15
IXXXX..	16.25	15.00	IXXXX...	10.40	10.15

### Terne Plates

8-lb. Coating 14 x 20	
100 lb. ....	\$7.00
IC .....	7.25
IX .....	7.50
Fire door stock .....	10.00

### Tin

Straits, pig .....	35c.
Bar .....	40c. to 45c.

### Copper

Lake ingot .....	16 c.
Electrolytic .....	15¼c.
Casting .....	15¼c.

### Spelter and Sheet Zinc

Western spelter .....	6¼c. to 7c.
Sheet zinc, No. 9 base, casks .....	10¼c. open 11c.

### Lead and Solder\*

American pig lead.....	5¼c. to 6¼c.
Bar lead .....	6¼c. to 7 c.
Solder, ½ and ⅓ guaranteed .....	27c.
No. 1 solder .....	25c.
Refined solder .....	21c.

\*Prices of solder indicated by private brand vary according to composition.

### Babbitt Metal

Best grade, per lb. ....	80c.
Commercial grade, per lb. ....	40c.
Grade D, per lb. ....	35c.

### Antimony

Asiatic .....	6¼c. to 6½c.
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### Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb....	26c. to 28c.
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### Old Metals

The market continues very sluggish and business is quiet. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy crucible.....	11.00
Copper, heavy wire.....	10.50
Copper, light and bottoms .....	8.25
Brass, heavy .....	5.50
Brass, light .....	4.75
Heavy machine composition.....	8.00
No. 1 yellow brass turnings .....	5.50
No. 1 red brass or composition turnings .....	7.25
Lead, heavy .....	3.75
Lead, tea .....	2.50
Zinc. ....	2.50



